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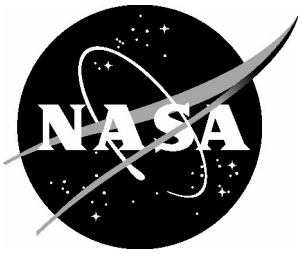

# Evaluating the Effectiveness of the 2002–2003 NASA CONNECT™ Program

## *Featuring Five Years of Longitudinal Trend Data*

*Thomas E. Pinelli*
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April 2004

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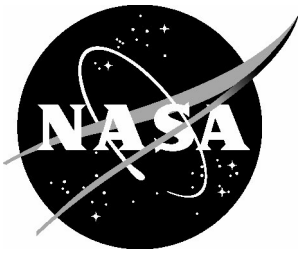

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## Summary

NASA CONNECT™ is a research-, inquiry-, and standards-based integrated mathematics, science, and technology distance learning (television and web-based) program series for students in grades 6–8. All nine programs in the 2002–2003 NASA CONNECT™ series include a 30-minute video, an educator guide containing a hands-on activity, and a web-based component. In March 2003, a randomly selected sample of 1,000 NASA CONNECT™ registrants received an electronic (self-reported) survey. In all, 232 participants returned surveys by the established cutoff date. Most survey questions employed a 5-point Likert-type response scale. Survey topics included (1) instructional technology and teaching; (2) instructional programming and technology in the classroom; (3) the NASA CONNECT™ program (television, educator guide, classroom activity, web-based activity, and web site); (4) classroom environment; and (5) demographics. About 70 percent of the respondents were female, about 68 percent identified "teacher" as their present professional duty, about 84 percent worked in a public school, and about 56 percent held a master's degree or master's equivalency. Regarding NASA CONNECT™, respondents reported that (1) they used the nine programs in the 2002–2003 NASA CONNECT™ series; (2) the stated objectives for each program were met; (3) the programs were aligned with the national mathematics, science, and technology standards); (4) program content was developmentally appropriate for the grade level; and (5) the programs in the 2002–2003 NASA CONNECT™ series enhanced and enriched the teaching of mathematics, science, and technology.

## Introduction

The NASA Langley Research Center's Office of Education (OEd) has the primary responsibility within the Agency for distance learning and the integration of instructional technology. Through the NASA Langley Center for Distance Learning, the OEd has developed a suite of five distance learning programs. Collectively, the goals of the four instructional broadcast programs include (1) increasing educational excellence; (2) enhancing and enriching the teaching of mathematics, science, and technology; (3) increasing scientific and technological literacy; and (4) communicating the results of NASA discovery, exploration, innovation, and research. NASA CONNECT™ is televised nationally and is used by almost 265,000 educators who represent over 8.9 million students. More information about NASA CONNECT™ can be found at the following web site: <http://connect.larc.nasa.gov>.

Evaluation is critical to any program's success. To determine the effectiveness as well as the credibility and validity of the series, NASA CONNECT™ registrants are surveyed annually. This report contains the quantitative and qualitative results of our attempt to determine the effectiveness of the 2002–2003 NASA CONNECT™ program.

## Overview of NASA CONNECT™

Produced by the Office of Education at the NASA Langley Research Center in Hampton, Virginia, NASA CONNECT™ is designed to increase scientific literacy, improve the mathematics and science proficiency of students in grades 6–8, and increase the competency of mathematics and science educators. The goals of this research- and standards-based, Emmy®-award-winning distance learning program include (1) showing students the application of mathematics, science, and technology on the job; (2) presenting mathematics, science, and technology as disciplines that require creativity, critical thinking, and problem-solving skills; (3) demonstrating the integration of workplace mathematics, science, and technology as a collaborative process; (4) raising student awareness about careers that require mathematics, science, and technology; and (5) overcoming stereotyped beliefs by presenting women and minorities performing challenging engineering and science tasks.

The 2002–2003 NASA CONNECT™ series received numerous awards for program achievement, educational content, and video production. Two programs from the 2002–2003 NASA CONNECT™ series received Emmy® Awards. *Who Added the 'Micro' to Gravity?* received an Emmy® from the Cleveland Chapter of the National Academy of Television Arts and Sciences (NATAS) for best Children's Program, and *Having a Solar Blast!* received an Emmy® in Children's Programming from the Pacific Southwest Chapter of NATAS. The series or individual programs in the series also received sundry awards of distinction and excellence in fields spanning the categories of creativity/videography to talent/on-camera, and web site graphics.

Now in its ninth year of production, NASA CONNECT™ is the oldest series in the NASA K–16 distance learning initiative. In addition to the goals listed in the Overview, NASA CONNECT™ also seeks to create opportunities for parental and community involvement, attempts to link formal education (e.g., the school) with informal education (e.g., libraries, museums, and science centers), and also to link preservice and in-service education. The NASA CONNECT™ model is research based, instructional rather than educational, result oriented, learner centered, technology focused, and feedback driven. NASA CONNECT™ is free to educators; however, educators must register to receive the educator (teacher) guides.

There are four ways to register for NASA CONNECT™:

(1) E-mail <dl+mail@larc.nasa.gov>
(2) online <http://connect.larc.nasa.gov>
(3) telephone 757-864-6100
(4) U.S. mail: NASA CONNECT™
Mail Stop 400-DL
Office of Education
NASA Langley Research Center
Hampton, VA 23681-2199

The number of registered teachers and the number of students viewing each program must be specified.

## Rights and Responsibilities

NASA CONNECT™ is a U.S. Government program and is not subject to copyright. No fees or licensing agreements are required to use programs in this series. Off-air rights are granted in perpetuity. Educators are granted unlimited rights for duplication, dubbing, broadcasting, cable casting, and web casting in perpetuity, with the understanding that all NASA CONNECT™ materials will be used for educational purposes. Neither the broadcast nor the educator guide may be used, either in whole or in part, for commercial purposes without the express written consent of the NASA Langley Center for Distance Learning.

## Production and Delivery

Programs in the 2002–2003 series comply with the specifications found in the National Educational Telecommunications Association (NETA) Common-Sense Guide to Technical Excellence. Programs run 28 minutes and 30 seconds. Each program was broadcast (delivered) via KU- and C-band satellite transmission. Public Television System (PBS) affiliates, statewide television systems such as T-STAR, district wide television systems, and cable access channels air NASA CONNECT™. NASA CONNECT™

is also video streamed via <knowitall.org> (provided by South Carolina Educational Television (ETV)). The NASA CONNECT™ web site has the satellite coordinates and broadcast dates and times.

## Availability

For a minimal fee, educators can obtain a video (VHS) copy of NASA CONNECT™ and print materials from the NASA Central Operation of Resources for Educators (CORE). Copies and print materials are also available from the NASA Educator Resource Center (ERC). URL: http://spacelink.nasa.gov/ercn

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URL: http://core.nasa.gov

## Importance of Evaluation

Formative and summative evaluation is critical to any program's success. While formative evaluation is an internal function that re-feeds results into the program to improve upon it, summative evaluation is for the purpose of demonstration and documentation (Beswick, 1990). A 2001 CEO Forum School Technology and Reading Report states, "[a]ssessment should become an ongoing part of instruction to inform and enhance teaching and learning and to promote student achievement" (CEO Forum, 2001). NASA CONNECT™ is a tool for enhancement and enrichment; the only way to gauge the effectiveness of that tool is to assess how it is being used. Evaluation is important for numerous reasons and plays an important role in the evolution of distance education (Hawkes, 1996). First, evaluation improves the credibility and validity of a program (Wade, 1999). Second, evaluation can be used to make changes in the program (Ramirez, 1999). Evaluation is particularly important because of the dynamism inherent both in education and technology. According to Dr. Lawrence T. Frase, Executive Director of the Research Division of Cognitive and Instructional Science at the Educational Testing Service, "The major issue for educational technology in the next millennium will be the effectiveness of its adaptation to social, scientific, and political change" (*THE Journal,* 2000). Third and finally, evaluation can help determine the effectiveness of a program (Hazari and Schnorr, 1999). Because of the wide array of information that can be reaped from the evaluation process, the Office of Education conducts an ongoing quantitative and qualitative assessment of NASA CONNECT™.

The Office of Education continues to develop new methods of evaluating NASA CONNECT™. The 2002–2003 NASA CONNECT™ season is the fifth season that can be evaluated from a longitudinal perspective (by comparing the 2002–2003 NASA CONNECT™ evaluation data with 1998–2002 NASA CONNECT™ evaluation data). This comparison will provide the Office of Education a more realistic benchmark with which to evaluate the NASA CONNECT™ series. Moreover, national data concerning teacher demographics, classroom environments, and teacher perceptions of instructional technology have also been infused into the 2002–2003 NASA CONNECT™ evaluation report, which allows the data received through the NASA CONNECT™ evaluation process to be compared to other national studies. In future seasons, the Office of Education may seek to expand evaluation to also include classroom observation by skilled observers and student feedback by means of short surveys. In summary, the Office of Education is continually striving to improve the evaluation process by creating more diverse and

in-depth measurement techniques. As stated by Michael Hawkes, "[b]y using an array of evaluation techniques and including everyone involved in the delivery of distance learning (parents, teachers, students) in data collection activities, evaluation tasks will not appear as ominous as they once did. More important, school leaders will be able to assess whether distance education technologies are part of the solution to improved learning and instruction" (page 33).

## Methodology

A sample of 1,000 registrants was randomly drawn from the NASA CONNECT™ database. In early March 2003, the registrants were directed via e-mail to an electronic (self-reported) survey/questionnaire. The survey contained 121 questions, 10 of which dealt with demographics. Survey questions are available in appendix A. Those directed to the survey could select from three options: (1) they could complete the survey and submit it, (2) they could ignore the request for user feedback and take no action, or (3) they could ask to receive a free copy of the final assessment report. In all, 232 usable surveys were received by the established cutoff date. Unlike previous years, there was no need for users to declare the survey "inappropriate" as it related to them because the survey was handled in an online capacity. The response rate for the 2002–2003 NASA CONNECT™ evaluation project was approximately 23 percent.

Appendix B gives a program description overview of the 2002–2003 NASA CONNECT™ season and also provides information for program registration and access to materials.

In addition to the quantitative data collected, the Office of Education also recorded all qualitative data that were received during the 2002–2003 NASA CONNECT™ season. These comments came from the evaluation survey, e-mail correspondence with educators, traditional mailings to educators, and telephone conversations. Comments were collected with regard to qualitative inquiries and were provided by the respondent for the purpose of general clarification. These comments are available in appendix C of the 2002–2003 NASA CONNECT™ evaluation.

## Demographics

The evaluation booklet contained a variety of demographic questions, the answers to which could be used to establish the respondent's profile, the classroom environment, and teacher/student computer use. Demographic findings for survey respondents follow:

- 147 of 209 respondents were female.
- 85 respondents were in suburban school districts, 63 in rural school districts, and 64 in urban school districts.
- 76 respondents identified "classroom teacher" as their present professional duty.
- 179 of 213 respondents worked in a public school.
- 120 of the respondents held a master's degree or master's equivalency.
- 185 of 208 respondents identified themselves as Caucasian.
- The mean and median ages of the respondents were 46.22 and 47, respectively.
- The mean and median "years as a professional educator" were 17.10 and 16, respectively.
- 119 of 127 respondents owned a personal computer.

- 148 of 212 respondents indicated they were members of a professional (national) mathematics or science educational organization.
- 2.27 years and 2 years, respectively, were the mean and median number of years respondents have used NASA CONNECT™.

## Presentation of Data

The survey questions were divided among ten topics. The respondents were asked to react to questions about instructional technology and programming in the classroom and to items specifically related to the NASA CONNECT™ program series. Findings for the remaining nine topics are presented in this section. The topic results are reported in terms of mean ratings when the survey items involved a 5-point Likert scale and in percentages when the questions required other responses. Each question was calculated by using the number of respondents (n) that answered that particular question rather than from the total population of respondents (N). Data from the 1998–1999, 1999–2000, 2000–2001, 2001–2002, and 2002–2003 program year evaluations can be found in appendix D.

### Topic 1. Instructional Technology and Teaching

Respondents were asked to rate seven statements about instructional technology and teaching (table 1). The highest mean rating ($\bar{x}$ = 4.27) was given to these statements: "instructional technology enables teachers to be more creative" and "instructional technology increases student motivation and enthusiasm for learning." The next highest mean ratings were given to these statements: "technology enables teachers to teach more effectively" ($\bar{x}$ = 4.18), "enables teachers to accommodate different learning styles" ($\bar{x}$ = 4.17), and "increases student willingness to discuss content/exchange ideas" ($\bar{x}$ = 4.09). At slightly lower mean ratings, the respondents reported that "instructional technology increases student learning and comprehension" ($\bar{x}$ = 4.07) and "instructional technology is effective with virtually all types of students" ($\bar{x}$ = 3.82).

Table 1. Instructional Technology and Teaching

| Question: Instructional technology… | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| enables teachers to teach more effectively. | 4.18 | 5 | 1.10 | 1 | 5 | 226 |
| enables teachers to accommodate different learning styles. | 4.17 | 4 | 1.05 | 1 | 5 | 222 |
| enables teachers to be more creative. | 4.27 | 5 | 1.06 | 1 | 5 | 223 |
| increases student learning and comprehension. | 4.07 | 4 | 1.08 | 1 | 5 | 221 |
| increases student willingness to discuss content/exchange ideas. | 4.09 | 4 | 1.05 | 1 | 5 | 217 |
| increases student motivation and enthusiasm for learning. | 4.27 | 5 | 1.04 | 1 | 5 | 219 |
| is effective with virtually all types of students. | 3.82 | 4 | 1.12 | 1 | 5 | 221 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

## Topic 2. Instructional Programming and Technology in the Classroom

### *Instructional Programming*

Respondents were asked to react to four statements about instructional technology programming intended for use in the classroom (table 2). Higher mean ratings were given to these statements: "schools have increasingly greater access to instructional technology programs" ( $\bar{x}$ = 3.95), "most programs are of good quality" ( $\bar{x}$ = 3.71), and "most programs are easily broken into 'teachable' units" ( $\bar{x}$ = 3.71). The lowest mean rating was assigned to this statement: "most programs are appropriate (for example, not too advanced or too basic) for their students" ( $\bar{x}$ = 3.58).

Table 2. Instructional Programming

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| Increasingly, schools have greater access to instructional programs. | 3.95 | 4 | 1.03 | 1 | 5 | 220 |
| Most programs are of good quality. | 3.71 | 4 | 1.00 | 1 | 5 | 215 |
| Most programs are appropriate (i.e., not too advanced or too basic) for my students. | 3.58 | 4 | 0.93 | 1 | 5 | 216 |
| Most programs are easily broken into "teachable" units. | 3.71 | 4 | 1.02 | 1 | 5 | 216 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

### *Instructional Technology*

Respondents completing the survey reacted to three statements concerning the actual use of instructional technology in the classroom (table 3). Respondents gave the highest mean rating ( $\bar{x}$ = 3.72) to the statements "administrators support and encourage teachers to use instructional technology in the classroom" and "classrooms are growing increasingly rich in instructional technology" ( $\bar{x}$ = 3.58). The lowest rating was given to the statement "teachers are generally positive about introducing/using instructional technology in the classroom" ( $\bar{x}$ = 3.45).

Respondents also received a list of seven factors that could prohibit or limit the integration of technology into their instructional programs. They were asked to indicate which of these factors they considered barriers to integrating technology into the instructional program (fig. 1). Respondents were not limited to selecting one factor; they could select all factors that applied. Respondents indicated that limited access to computers was the greatest barrier (162 respondents), followed by lack of time in the school schedule for technology projects (145 respondents), and lack of teacher training opportunities (114 respondents). Not enough computer software was ranked next (112 respondents), followed by lack of knowledge about methods of integrating technology into the curriculum (93 respondents), followed by lack of knowledge concerning the methods of integrating technology into the curriculum (93 respondents). Failure to install purchased software was the factor least affecting the integration of technology in the classroom (25 respondents).

Table 3. Instructional Technology

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| Administrators support and encourage teachers to use instructional technology in the classroom. | 3.72 | 4 | 1.20 | 1 | 5 | 218 |
| Classrooms are growing increasingly rich in instructional technology. | 3.58 | 4 | 1.11 | 1 | 5 | 220 |
| Teachers are generally positive about introducing/using instructional technology in the classroom. | 3.45 | 3 | 0.95 | 1 | 5 | 222 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

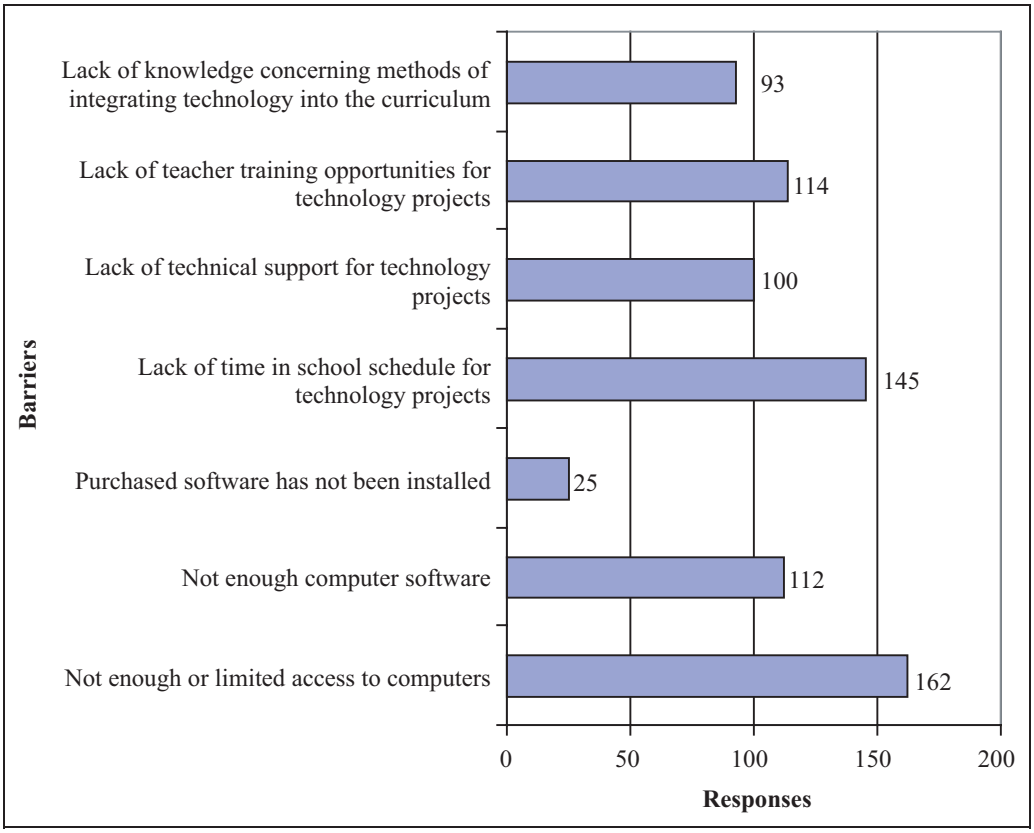


Figure 1. Factors that are barriers to integrating technology into the instructional program.

## Topic 3. Overall Assessment of NASA CONNECT™

Respondents were asked to provide an overall assessment of the nine programs in the 2002–2003 NASA CONNECT™ series (table 4). The highest mean ratings were given to the statements "the NASA CONNECT™ programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills" ($\bar{x}$ = 4.41) and "the program content was aligned with

national mathematics, science, and technology standards" ( $\bar{x}$ = 4.40). High mean ratings were also given to "the NASA CONNECT™ programs presented the application of mathematics, science, and technology on the job" ( $\bar{x}$ = 4.38) and "program content enhanced the teaching of mathematics, science, and technology" ( $\bar{x}$ = 4.37). The statement, "the 2002–2003 NASA CONNECT™ program met its stated objectives," was rated by respondents as comfortably above the 4.00 mark ( $\bar{x}$ = 4.27). Respondents gave the lowest ratings to these statements: "the program was developmentally appropriate for the grade level" ( $\bar{x}$ = 4.16) and "the program content was easily integrated into the curriculum" ( $\bar{x}$ = 4.15).

Table 4. Overall Assessment of NASA CONNECT™ Program

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| Programs met their stated objectives. | 4.27 | 5 | 1.00 | 1 | 5 | 158 |
| Program content was developmentally appropriate for the grade level. | 4.16 | 5 | 1.02 | 1 | 5 | 160 |
| Program content was aligned with the national mathematics, science, and technology standards. | 4.40 | 5 | 1.00 | 1 | 5 | 162 |
| Program content was easily integrated into the curriculum. | 4.15 | 4.5 | 1.05 | 1 | 5 | 158 |
| Program content enhanced the teaching of mathematics, science, and technology. | 4.37 | 5 | 0.99 | 1 | 5 | 163 |
| Programs raised student awareness about careers that require mathematics, science, and technology. | 4.34 | 5 | 0.99 | 1 | 5 | 155 |
| Programs presented the application of mathematics, science, and technology on the job. | 4.38 | 5 | 0.98 | 1 | 5 | 156 |
| Programs presented workplace mathematics, science, and technology as a collaborative process. | 4.32 | 5 | 1.03 | 1 | 5 | 155 |
| Programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills. | 4.41 | 5 | 1.01 | 1 | 5 | 160 |
| Programs presented women and minorities performing challenging engineering and science tasks. | 4.32 | 5 | 0.98 | 1 | 5 | 145 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

## Topic 4. NASA CONNECT™ Broadcast/Video Programs

Respondents were asked if they used the nine programs at the time they were received (fig. 2). The number of "yes" responses varied from 75 respondents (35 percent) for Program 2 to 31 respondents (15 percent) for Program 6. The number of "no" responses varied from 33 respondents for Program 8 (15 percent), to 69 (33 percent) for Program 6. Overall, the number of respondents indicating that they had not used the programs but "may in the future" ranged from 131 (61 percent) for Program 9 to 95 (44 percent) for Program 2.

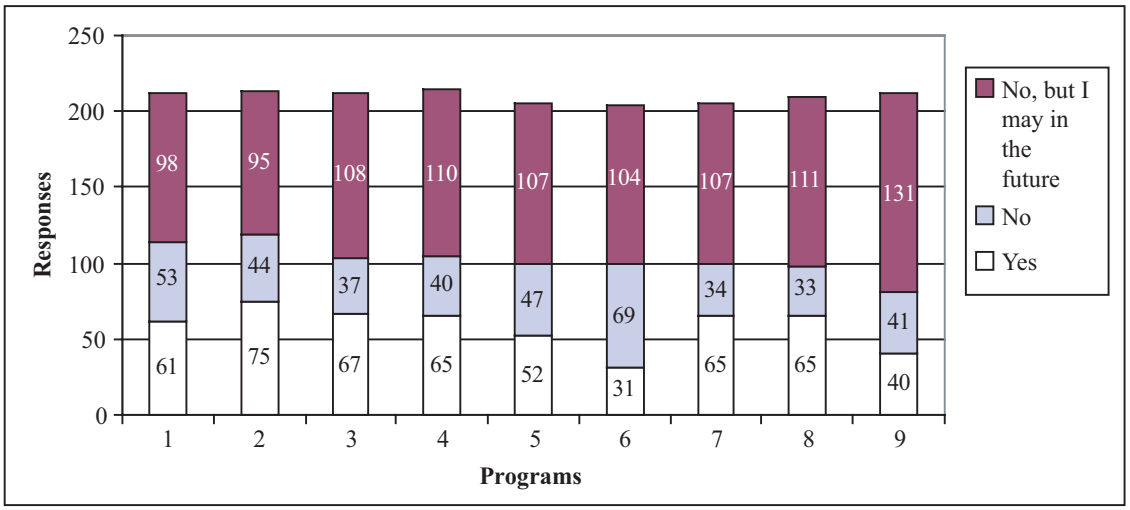


Figure 2. Use of NASA CONNECT™ broadcast/video programs.

Respondents who used the NASA CONNECT™ programs were asked to identify how they used them in their classes (table 5). Respondents were asked to choose from four possible uses for each of the nine identified programs: (1) to introduce a curriculum topic, objective, or skill; (2) to reinforce a curriculum topic, objective, or skill; (3) as a special interest topic; or (4) for some other purpose. The highest number of respondents indicated that they used the programs to reinforce a curriculum topic, objective, or skill (ranging from 36 respondents for Program 1 to 11 respondents for Program 9). The least common reported use of NASA CONNECT™ programs was as a break from classroom routine (ranging from 15 respondents for Program 4 to 5 respondents for Programs 6 and 9).

Table 5. How NASA CONNECT™ Programs Are Used in Classroom

| Question: NASA CONNECT™ was used . . . | Program | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| to introduce a curriculum topic, objective, or skill | 26 | 21 | 20 | 18 | 19 | 9 | 24 | 12 | 11 |
| to reinforce a curriculum topic, objective, or skill | 36 | 30 | 33 | 29 | 29 | 12 | 27 | 26 | 11 |
| as a special interest topic | 17 | 26 | 16 | 15 | 17 | 9 | 13 | 18 | 23 |
| as a break from classroom routine | 14 | 13 | 11 | 15 | 13 | 5 | 11 | 7 | 5 |

***Program Delivery***

Respondents were then asked whether they viewed each of the nine indicated programs live, taped, or via both methods (table 6). Most respondents did not view the programs live; instead, the programs were taped and viewed at a later time. Only a small percentage of respondents reported viewing the programs both live and taped. Respondents could also indicate that they did not view the program at all. There was little variance in the number of respondents who had not viewed the programs.

Table 6. How NASA CONNECT™ Programs Were Viewed

| Question: How did you view the following programs? | Live | Taped | Both | Not viewed |
|---|---|---|---|---|
| Program 1 | 5 | 48 | 8 | 14 |
| Program 2 | 2 | 46 | 5 | 12 |
| Program 3 | 2 | 41 | 4 | 13 |
| Program 4 | 3 | 42 | 3 | 11 |
| Program 5 | 1 | 40 | 4 | 8 |
| Program 6 | 3 | 20 | 5 | 12 |
| Program 7 | 3 | 39 | 5 | 13 |
| Program 8 | 1 | 41 | 3 | 10 |
| Program 9 | 2 | 25 | 5 | 14 |

In correlation with the previous section, respondents who used the program were asked to indicate the method by which they received the program (table 7). Five options for program receipt were given: (1) PBS, (2) downlinked it, (3) Media Specialist taped it, (4) I or someone else taped it, or (5) NASA sent me the tapes. A total of 161 individuals responded to this question, and each respondent was asked to select all methods of receipt that applied. The most common method of receipt reported was "a media specialist taped the programs" (57 respondents), followed by "I or someone else taped it" (50 respondents). Viewing the programs via PBS registered 45 responses, while downlinking the programs registered 27 responses. The least common method of receiving the 2002–2003 NASA CONNECT™ programs was that NASA sent respondents the tapes (24 respondents). A follow-up question regarding receipt of the NASA CONNECT™ program inquired whether the respondent experienced any difficulty obtaining any of the programs in the 2002–2003 series. Of the 200 respondents, 48 percent indicated experiencing difficulty obtaining the programs, a 3-percent decrease from last year's data.

Table 7. How Programs Were Received

| Question: How did you receive the programs? | Number of responses (n) |
|---|---|
| PBS | 45 |
| Downlinked it | 27 |
| Media Specialist taped it | 57 |
| I or someone else taped it | 50 |
| NASA sent me the tapes | 24 |

### *Grades Viewing the NASA CONNECT™ Programs*

Respondents who used the 2002–2003 NASA CONNECT™ series were asked to report which grade levels viewed the programs (fig. 3). Eighth graders (21 percent) had the largest percentage of students viewing the 2002–2003 NASA CONNECT™ series, followed by seventh (18 percent), and sixth (15 percent) graders. The least common grade levels to view the 2002–2003 NASA CONNECT™ programs were grades 13 and 15, comprising less than 1 percent of the total viewing audience. One should assume that postgraduate grade levels were likely viewing the programs in a training capacity. The grade levels viewing the shows are predominantly aligned with the target audience of the NASA CONNECT™ series.

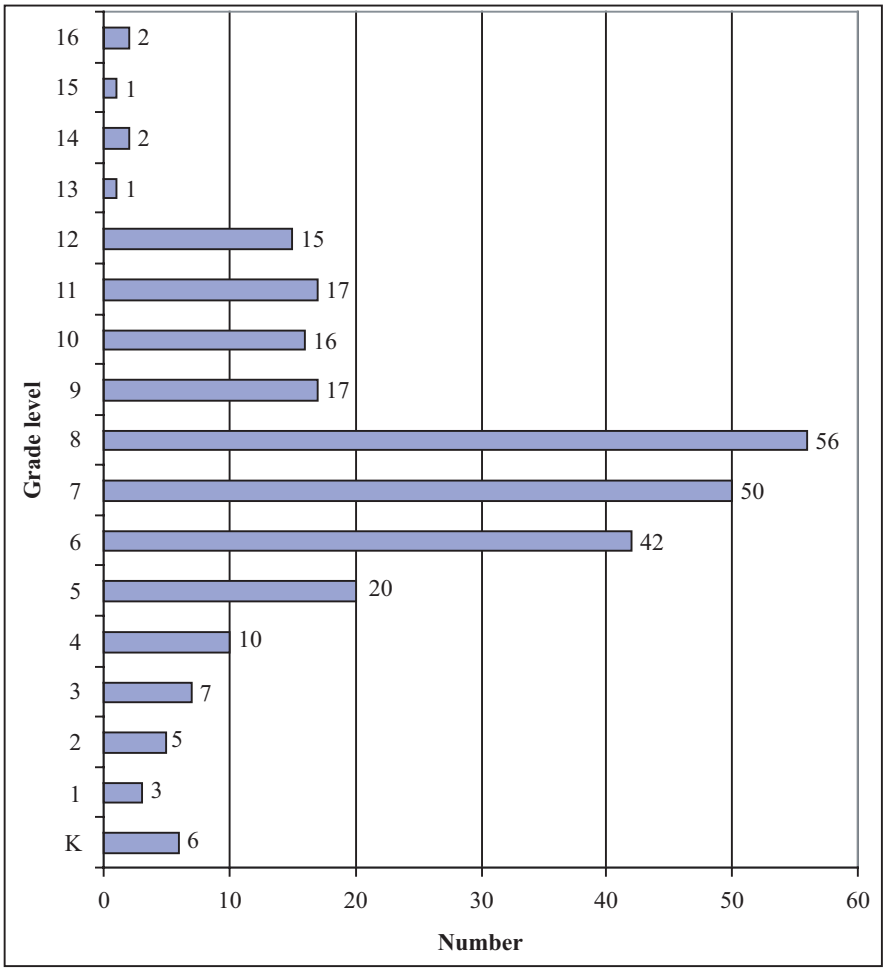


Figure 3. Grades viewing NASA CONNECT™ programs.

***Quality of Broadcast/Video Programs***

The last component of the NASA CONNECT™ television/video program evaluation process asked respondents to evaluate program content and quality by indicating their level of agreement with 16 statements (table 8). The statement receiving the strongest support from the respondents was "the programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills" ($\bar{x}$ = 4.34), followed by "the programs illustrated the integration of workplace mathematics, science and technology," and "the programs enhanced the integration of mathematics, science, and technology" ($\bar{x}$ = 4.31). High marks were also given to the statements that "the programs were of good technical quality," and "the programs demonstrated the application of mathematics, science, and technology on the job" ($\bar{x}$ = 4.27). Receiving the lowest scores were these statements: "the programs were effective with virtually all types of students" ($\bar{x}$ = 3.87), preceded by "the programs enabled me to accommodate different learning styles," and "the programs were developmentally appropriate for the grade level" ($\bar{x}$ = 4.03).

Table 8. Quality of NASA CONNECT™ Television/Video Programs

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The programs were of good artistic quality. | 4.12 | 4 | 0.97 | 1 | 5 | 148 |
| The programs were of good technical quality. | 4.27 | 4 | 0.94 | 1 | 5 | 150 |
| The programs enabled me to accommodate different learning styles. | 4.03 | 4 | 0.95 | 1 | 5 | 143 |
| The programs increased student willingness to discuss/exchange ideas. | 4.05 | 4 | 0.95 | 1 | 5 | 138 |
| The programs increased student enthusiasm for learning. | 4.21 | 4 | 0.94 | 1 | 5 | 137 |
| The programs were effective with virtually all types of students. | 3.87 | 4 | 1.02 | 1 | 5 | 138 |
| The programs were a valuable instructional aid. | 4.25 | 5 | 0.98 | 1 | 5 | 143 |
| The programs were developmentally appropriate for the grade level. | 4.03 | 4 | 0.94 | 1 | 5 | 146 |
| The programs were easily incorporated into the curriculum. | 4.08 | 4 | 0.99 | 1 | 5 | 147 |
| The programs enhanced the integration of mathematics, science, and technology. | 4.31 | 5 | 1.04 | 1 | 5 | 147 |
| The programs raised student awareness of careers that require mathematics, science, and technology. | 4.20 | 5 | 1.06 | 3 | 5 | 146 |
| The programs demonstrated the application of mathematics, science, and technology on the job. | 4.27 | 5 | 1.04 | 1 | 5 | 147 |
| The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills. | 4.34 | 5 | 1.05 | 1 | 5 | 147 |
| The programs illustrated the integration of workplace mathematics, science, and technology. | 4.31 | 5 | 1.01 | 1 | 5 | 148 |
| The programs presented women and minorities performing challenging engineering and scientific tasks. | 4.22 | 5 | 1.03 | 1 | 5 | 140 |
| The programs were a positive link between the classroom activity and the web-based activity. | 4.21 | 5 | 0.97 | 1 | 5 | 134 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

## Topic 5. NASA CONNECT™ Educator Guides

### *Use of Educator Guides*

Respondents were asked if they used the educator guides they received as part of their registration with the NASA CONNECT™ series (fig. 4). The percentage of "yes" responses varied from 36 percent for Program 2 to 16 percent for Program 6. The percentage of "no" responses varied from a high of 25 percent for Program 6 to a low of 13 percent for Program 3. Overall, the percentage of respondents indicating that they "may use the program in the future" ranged from 60 percent for Program 9 to 43 percent for Program 2. These results indicate a higher rate of usage than seen in the 2001–2002 NASA CONNECT™ season.

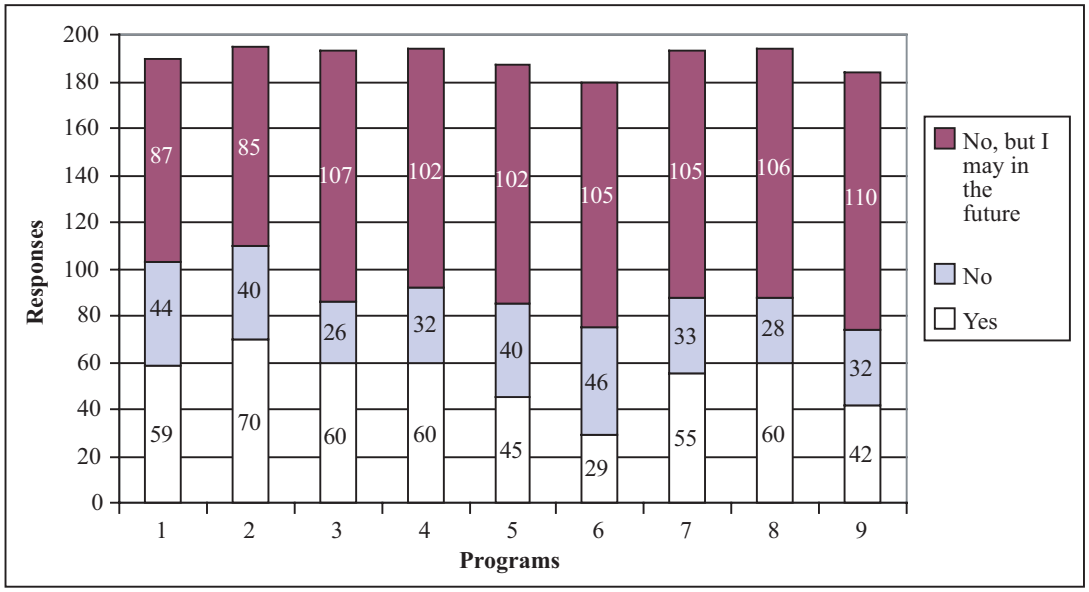


Figure 4. Use of Educator Guides.

### *Quality of Educator Guides*

The respondents were asked to react to seven statements about the quality of the NASA CONNECT™ educator guides (table 9). The statement about the educator guides "being a valuable instructional aid" received the highest mean rating ($\bar{x}$ = 4.26), the same as last year. The statement receiving the next highest level of agreement was "the teacher 'background' portion of the educator guide was a valuable instructional aid" ($\bar{x}$ = 4.22). The next highest scores were given to these statements: "the print and electronic resources in the educator guides were a valuable instructional aid" ($\bar{x}$ = 4.14) and "the layout of the educator guides presented the information clearly" ($\bar{x}$ = 4.13). Both of these statements, "the directions/instructions in the educator guides presented the information clearly" and "the cue cards provided a positive link between the video and lesson guide" registered means of 4.09. The statement that "the lesson guide was easily downloaded from the Internet" received the lowest mean rating ($\bar{x}$ = 4.05.)

Table 9. Quality of NASA CONNECT™ Educator Guides

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The directions/instructions in the educator guides presented the information clearly. | 4.09 | 4 | 1.07 | 1 | 5 | 142 |
| The layout of the educator guides presented the information clearly. | 4.13 | 4 | 1.05 | 1 | 5 | 148 |
| The educator guides were a valuable instructional aid. | 4.26 | 5 | 1.03 | 1 | 5 | 145 |
| The print and electronic resources in the lesson guide were a valuable instructional aid. | 4.14 | 4 | 1.03 | 1 | 5 | 139 |
| The cue cards provided a positive link between the video and the lesson guide. | 4.09 | 4 | 1.05 | 1 | 5 | 119 |
| The teacher "background" portion of the lesson guide was a valuable instructional aid. | 4.22 | 4.5 | 1.00 | 1 | 5 | 138 |
| The lesson guide was easy to download from the Internet. | 4.05 | 5 | 1.18 | 1 | 5 | 116 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

### *Potential Educator Guide Formats*

Respondents were queried as to their willingness to use the educator guides if they were made available on CD or DVD (fig. 5). The number of respondents indicating that they could use the educator guides on CD (136 respondents) and that they would use the guides on CD (131 respondents) significantly exceeded the number of respondents indicating that they could/would use the educator guides on DVD (47 and 49 respondents, respectively).

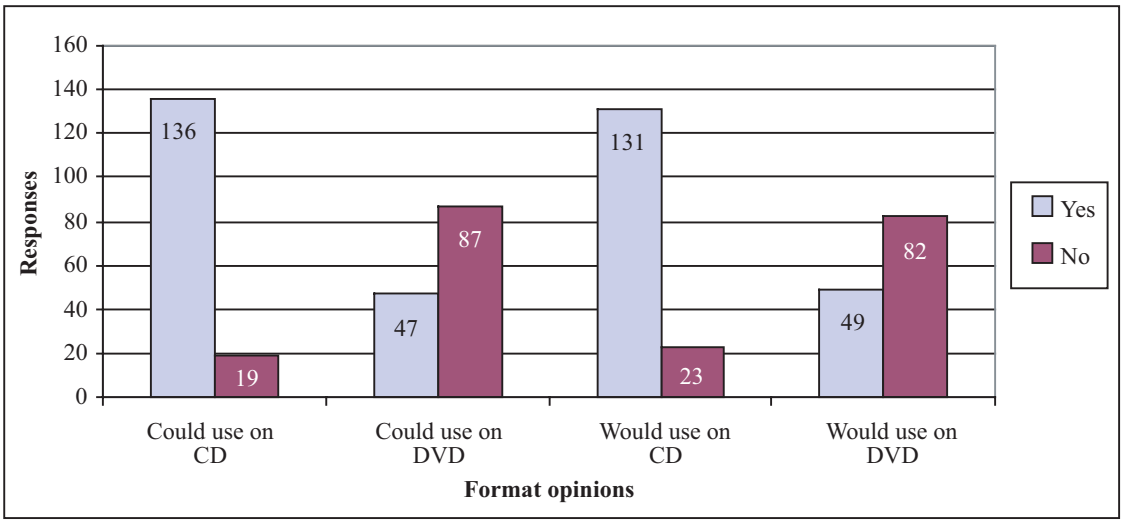


Figure 5. Educator Guide format opinions.

## Topic 6. NASA CONNECT™ Classroom Activities/Experiments

### *Use of Classroom Activities/Experiments*

Respondents were asked if they used the classroom activities/experiments included with the NASA CONNECT™ series (fig. 6). The percentage of "yes" responses varied from 34 percent for Program 2 to 11 percent for Program 6. The percentage of "no" responses varied from a high of 30 percent for Program 6 to a low of 18 percent for Programs 3 and 7. Overall, the percentage of respondents indicating that they "may use the program in the future" ranged from 59 percent for Programs 6 and 9, to 45 percent for Program 2.

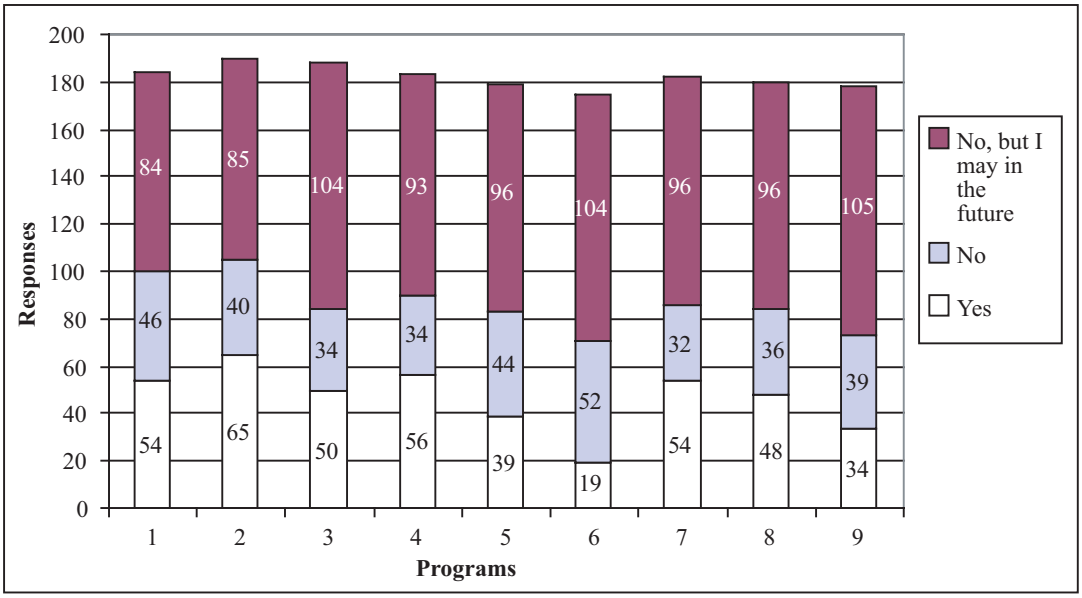


Figure 6. Use of classroom activities and experiments.

### *Quality of Classroom Activities/Experiments*

Respondents were asked to respond to four statements about the program-related classroom activities/experiments (table 10). The quality of the classroom activities/experiments was rated highest for complementing the lesson for each show ($\bar{x}$ = 4.15). The classroom activities/experiments also were rated high for ease of use ($\bar{x}$ = 4.04) and that they were developmentally appropriate for the grade level ($\bar{x}$ = 4.03). The lowest mean rating was given to the statement concerning the ease of incorporating them into the lesson plans ($\bar{x}$ = 3.96).

Table 10. Quality of NASA CONNECT™ Classroom Activities and Experiments

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The classroom activity (experiment) was easily incorporated into my lesson plan. | 3.96 | 4 | 1.12 | 1 | 5 | 124 |
| The classroom activity (experiment) complemented the lesson for each show. | 4.15 | 4 | 1.06 | 1 | 5 | 120 |
| The classroom activity was developmentally appropriate for the grade level. | 4.03 | 4 | 1.03 | 1 | 5 | 127 |
| The classroom activities (experiments) were easy for me to use. | 4.04 | 4 | 1.12 | 1 | 5 | 121 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

## Topic 7. NASA CONNECT™ Web-Based Activities

### *Use of Web-Based Activities*

Respondents were asked if they used the web-based activities included with the NASA CONNECT™ series (fig. 7). The percentage of "yes" responses varied from 25 percent for the activities associated with Program 2, to 5 percent for Program 6. The percentage of "no" responses varied from a high of 33 percent for Program 6 to a low of 24 percent for Program 3. Overall, the percentage of respondents indicating that they "may use the activities in the future" ranged from 61 percent for Programs 6 and 9, to 49 percent for Program 2.

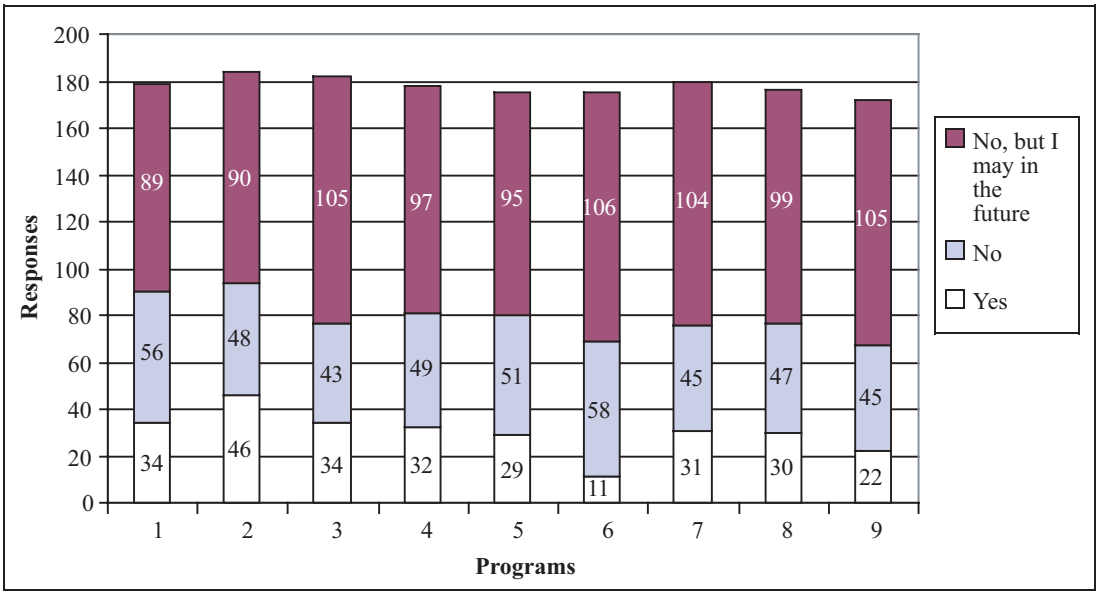


Figure 7. Use of web-based activities.

### *Grades Using NASA CONNECT™ Web-Based Activities*

Respondents who used the 2002–2003 NASA CONNECT™ program were asked to report which grade levels used the web-based activities (fig. 8). The largest percentage of students viewing the 2002–2003 NASA CONNECT™ series were seventh and eighth graders (26 percent each), followed by sixth graders (16 percent), and twelfth graders (6 percent). All other grade levels who viewed the 2002–2003 NASA CONNECT™ programs registered 5 percent or less, of the overall usage.

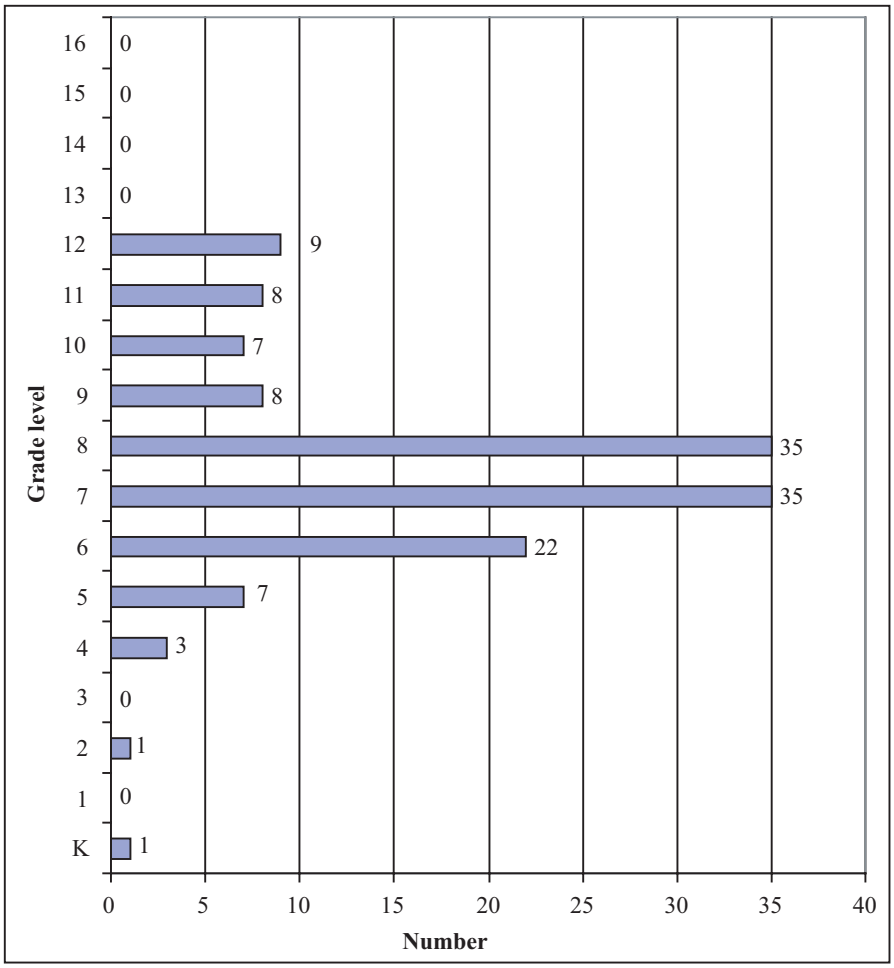


Figure 8. Grades using NASA CONNECT™ web-based activities.

### *Quality of Web-Based Activities*

The respondents were asked to react to 12 statements concerning the quality of the NASA CONNECT™ programs' web-based activities (table 11). The statements that "the content of the web-based activities enhanced the integration of mathematics, science, and technology" ($\bar{x}$ = 4.27) indicated that more online activities should be available on the NASA CONNECT™ web site ($\bar{x}$ = 4.25) and that "the web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge" ($\bar{x}$ = 4.24) received the highest mean ratings from the respondents. Slightly lower ratings were given to the statements that "web-based activities will likely be revisited/reused" ($\bar{x}$ = 4.21) and that "the web-based activities, as a whole, enhanced the integration of mathematics,

science, and technology" ( $\bar{x}$ = 4.20). The statements, "the content of the web-based activities was appropriate for my students" ( $\bar{x}$ = 3.98) and "students were able to complete the web-based activities in a reasonable amount of time" ( $\bar{x}$ = 3.82) received the lowest mean ratings for this section.

Table 11. Quality of NASA CONNECT™ Web-Based Activities

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The content of the web-based activities was easily integrated into the curriculum. | 4.10 | 4 | 1.01 | 1 | 5 | 80 |
| The content of the web-based activities enhanced the integration of mathematics, science, and technology. | 4.27 | 4 | 0.92 | 1 | 5 | 79 |
| The web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge. | 4.24 | 4 | 0.94 | 1 | 5 | 78 |
| Students were able to complete the web-based activities in a reasonable amount of time. | 3.82 | 4 | 1.09 | 1 | 5 | 73 |
| The web-based activities accommodated various learning styles. | 4.00 | 4 | 1.02 | 1 | 5 | 75 |
| The content for the web-based activities was appropriate for my students. | 3.98 | 4 | 1.04 | 1 | 5 | 75 |
| The graphics for the web-based activities was appropriate for my students. | 4.10 | 4 | 1.11 | 1 | 5 | 77 |
| The web-based activities enhanced the integration of mathematics, science, and technology. | 4.20 | 4 | 0.99 | 1 | 5 | 78 |
| The web-based activities had a good balance of text and graphics. | 4.21 | 4 | 1.00 | 1 | 5 | 78 |
| The web-based activities allowed my students to work at their own pace. | 4.19 | 4 | 1.04 | 1 | 5 | 77 |
| The web-based activities will likely be revisited/reused. | 4.21 | 4.5 | 1.05 | 1 | 5 | 78 |
| More online activities should be available on the NASA CONNECT™ web site. | 4.25 | 5 | 1.11 | 1 | 5 | 76 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

Respondents were also asked whether their students used Dan's Domain. Of those responding (n = 96), 86 percent indicated that they did not use Dan's Domain, while 14 percent reported using this aspect of the web-based activity.

## Topic 8. NASA CONNECT™ Web Site

### *Quality of NASA CONNECT™ Web Site*

Those surveyed were asked to respond to eight statements about the NASA CONNECT™ web site (table 12). They gave the highest mean ratings to the statements, "the NASA CONNECT™ web site is clearly legible" ($\bar{x}$ = 4.31) and "the NASA CONNECT™ web site is designed so that printouts of individual pages are legible" ($\bar{x}$ = 4.28). They also gave high ratings to these statements: "the NASA CONNECT™ web site is visually appealing" ($\bar{x}$ = 4.26) and "the balance between text and graphics on the web site" ($\bar{x}$ = 4.24) and "the links to other sites/pages are current" ($\bar{x}$ = 4.14). Respondents gave the lowest rating to "the speed of downloading the web site" ($\bar{x}$ = 3.95).

Table 12. Quality of NASA CONNECT™ Web Site

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The NASA CONNECT™ web site is visually appealing. | 4.26 | 5 | 1.01 | 1 | 5 | 155 |
| There is a good balance between text and graphics on the web site. | 4.24 | 4 | 0.99 | 1 | 5 | 154 |
| The web site is easily navigated. | 4.13 | 4 | 1.01 | 1 | 5 | 154 |
| When viewed on my monitor, the web site is clearly legible. | 4.31 | 5 | 0.94 | 1 | 5 | 156 |
| The web site is designed so that printouts of individual pages are legible. | 4.28 | 4.5 | 0.95 | 1 | 5 | 146 |
| Pages within the web site download quickly. | 3.95 | 4 | 1.09 | 1 | 5 | 147 |
| The page lengths are appropriate. | 4.13 | 4 | 0.98 | 1 | 5 | 147 |
| The links to other sites/pages are current. | 4.14 | 4 | 1.03 | 1 | 5 | 146 |

Min. denotes the minimum rating reported.
Max. denotes the maximum rating reported.

## Topic 9. Classroom Environment

### *Instructional Technology Equipment*

Respondents were asked about the availability/location of specific kinds of technology in their classrooms, schools, and homes (fig. 9). A television, a VCR, a video camera, a laserdisc player, video editing equipment, a computer, and a DVD were the items specified. The respondents were asked to mark all that applied.

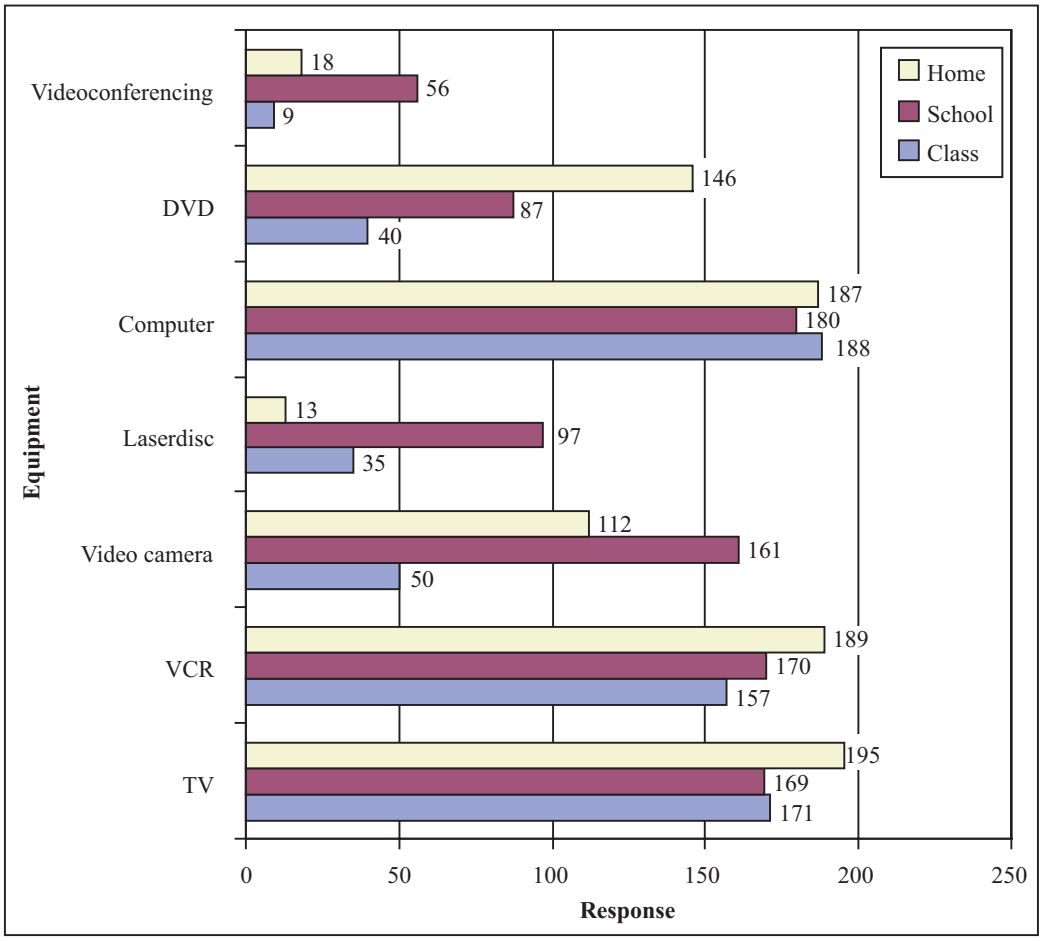


Figure 9. Availability of specific instructional technology.

Television – One hundred seventy-one (171) respondents reported that they had a television in their classrooms, one hundred sixty-nine (169) had televisions in their schools, and one hundred ninety-five (195) had televisions in their homes.

VCR – One hundred fifty-seven (157) respondents reported having a VCR in their classrooms, one hundred seventy (170) had VCRs in their schools, and one hundred eighty-nine (189) had VCRs in their homes.

Video Camera – Fifty (50) respondents said that they had a video camera in their classrooms, while one hundred sixty-one (161) had video cameras in their schools, and one hundred twelve (112) had video cameras in their homes.

Laserdisc Player – Thirty-five (35) respondents reported having laserdisc players in their classrooms. Ninety-seven (97) had them in their schools, and thirteen (13) had them in their homes.

Computer – One hundred eighty-eight (188) respondents reported having a computer in their classrooms, one hundred eighty (180) had computers in their schools, and one hundred eighty-seven (187) had computers in their homes.

DVD Player – Forty (40) respondents reported having a DVD player in their classrooms. Eighty-seven (87) had one in their schools, and one hundred forty-six (146) had one in their homes.

Videoconferencing Equipment – Only nine (9) respondents had videoconferencing equipment in their classrooms, fifty-six (56) had videoconferencing equipment in their schools, and eighteen (18) had the equipment in their homes.

***Computer Accessories***

Respondents were asked about the availability/location of specific computer accessories in their homes and schools (fig. 10). The accessories were a CD-ROM, a DVD, and an internet connection. The respondents were asked to mark all choices that applied.

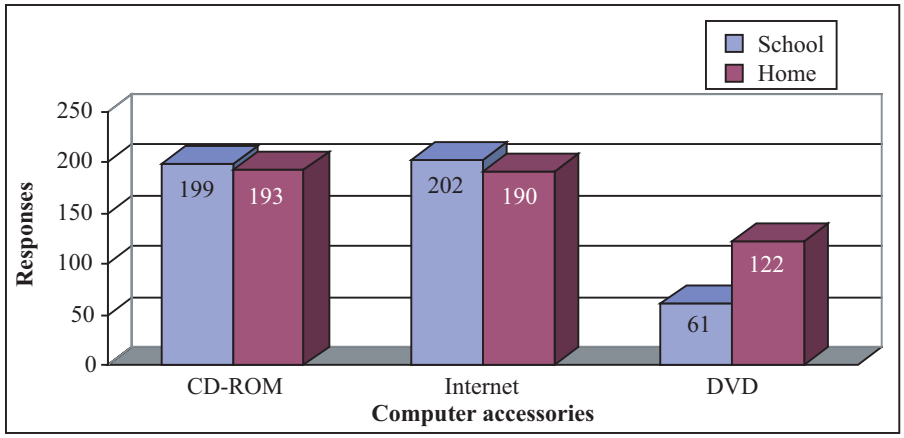


Figure 10. Availability of specific computer accessories.

CD-ROM – One hundred ninety-nine (199) respondents had CD-ROMs in their schools. One hundred ninety-three (193) respondents had CD-ROMs in their homes.

Internet Connection – Two hundred two (202) respondents had internet connections in their schools. One hundred ninety (190) reported internet connections in their homes.

DVD – Sixty-one (61) respondents had DVDs in their schools and one hundred twenty-two (122) had them in their homes.

***School Computer Operating System***

Survey respondents were asked how many computers were in their classrooms. The mean number of computers in each classroom was ($\bar{x}$ = 4.43). Survey respondents were then asked to identify the computer operating system used in their schools (fig. 11). The most prevalent operating systems were Windows 98 and Windows 2000. On the whole, Windows operating systems were more common than Macintosh operating systems.

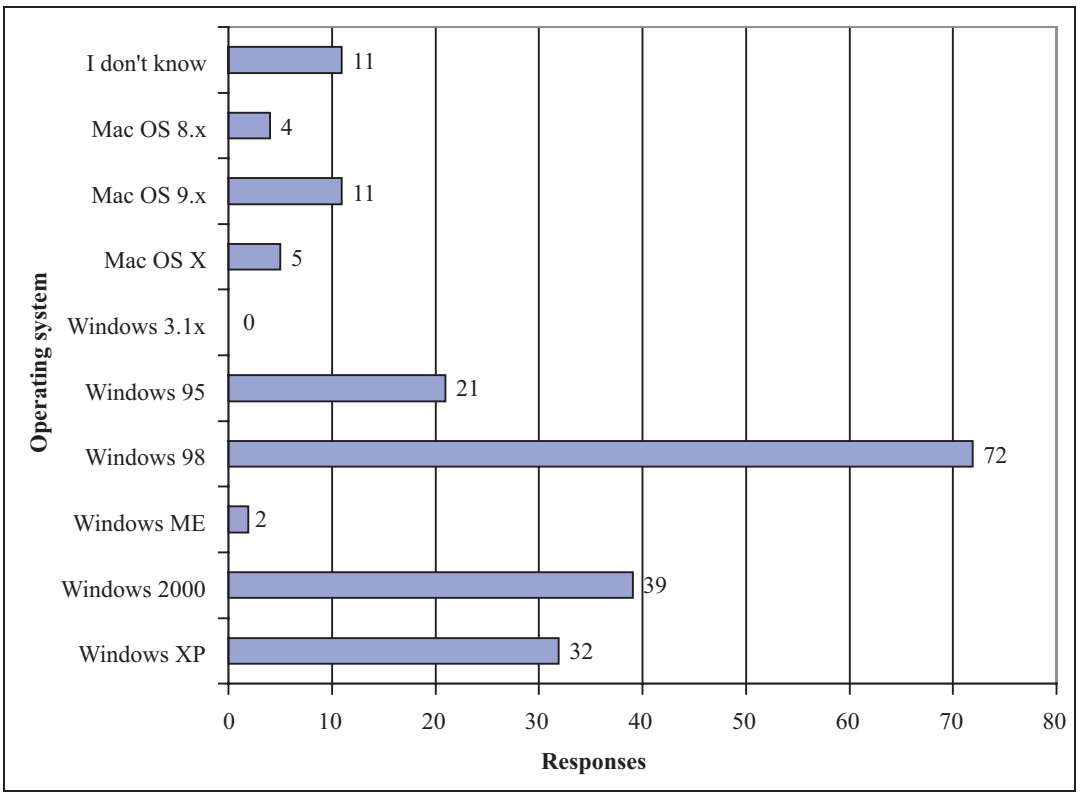


Figure 11. Computer operating systems used in schools.

### *Videoconference/Electronic Field Trip Participation*

Respondents were requested to indicate whether they or their students had ever participated in an electronic field trip and/or a videoconference. Sixty-four respondents (32 percent) answered "yes," while one hundred thirty-six respondents (68 percent) answered "no."

### *Student Use of School Computers*

Respondents were asked how often a typical student in their schools used a computer during a given month (fig. 12). Thirty-six reported that a student used a computer 1 to 5 times in a given month, 23 percent reported use from 6 to 10 times, and 20 percent reported student use of a computer from 11 to 20 times within a given month. Fourteen percent of those surveyed said that a student used a computer in their schools 21 to 40 times in a given month, while 7 percent reported usage at 41 or more times within a month. On the whole, there has been a shift to more frequent usage of computers in the classroom over the past 3 years.

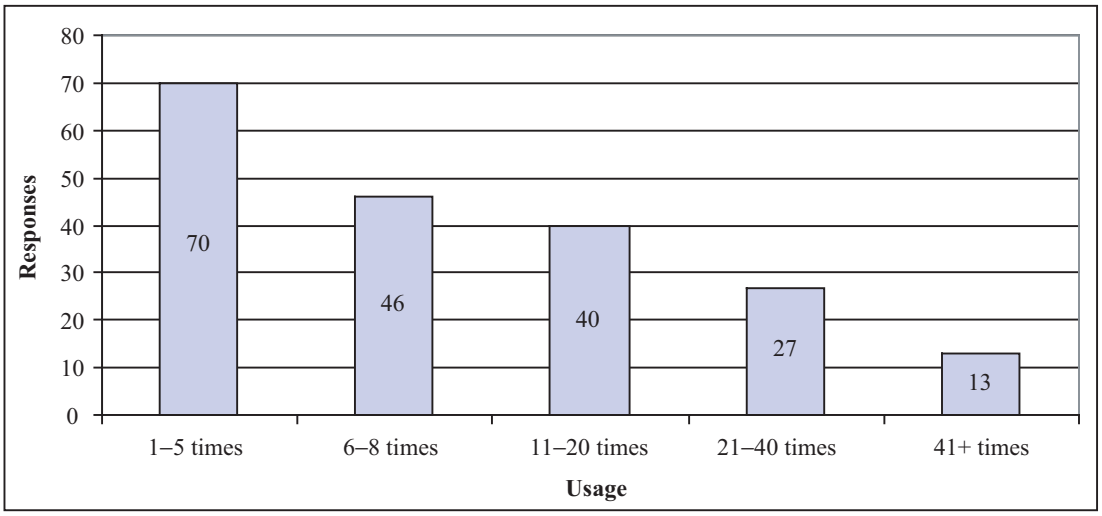


Figure 12. Student use of school computers.

### *Student-to-Computer Ratio*

Survey respondents were asked about the student-to-computer ratio in the classroom (fig. 13). Thirty-one percent responded that students operated computers on a ratio of 1 student per computer. Forty-two percent reported that 2 students shared a computer. Sixteen percent indicated that students operated computers in groups (i.e., 3 or more students per computer). One percent reported that students worked on the computers as a class. Respondents could mark all boxes that applied.

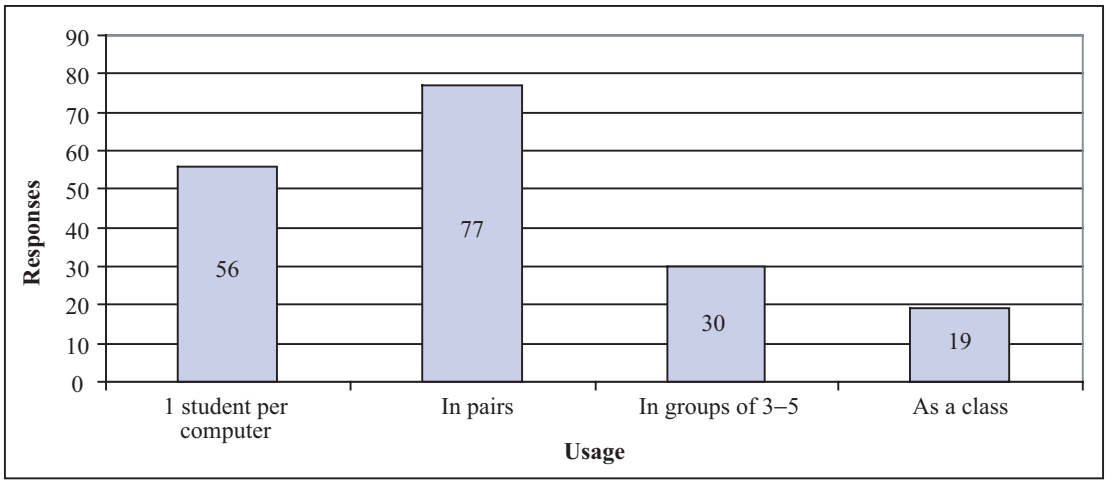


Figure 13. Student-to-computer ratio.

### *Classroom Connection to Internet*

Respondents were asked to indicate how the computers in their classrooms are connected to the Internet (fig. 14). Eight respondents (4 percent) reported that a 28.8 modem was used. Seven percent indicated that a 56-K modem was used, and 15 percent reported the use of a cable modem. Fifteen respondents (7 percent) said that a 56-K flex modem was used. Twenty-four respondents (12 percent) said that their classrooms connected to the Internet with a cable modem, while 92 respondents (45 percent) said that their classroom uses a T-1 line or higher connection. Four respondents (2 percent) indicated that their classroom does not have an internet connection, and 61 respondents (30 percent) claimed not to know what kind of connection they have to the Internet in the classroom.

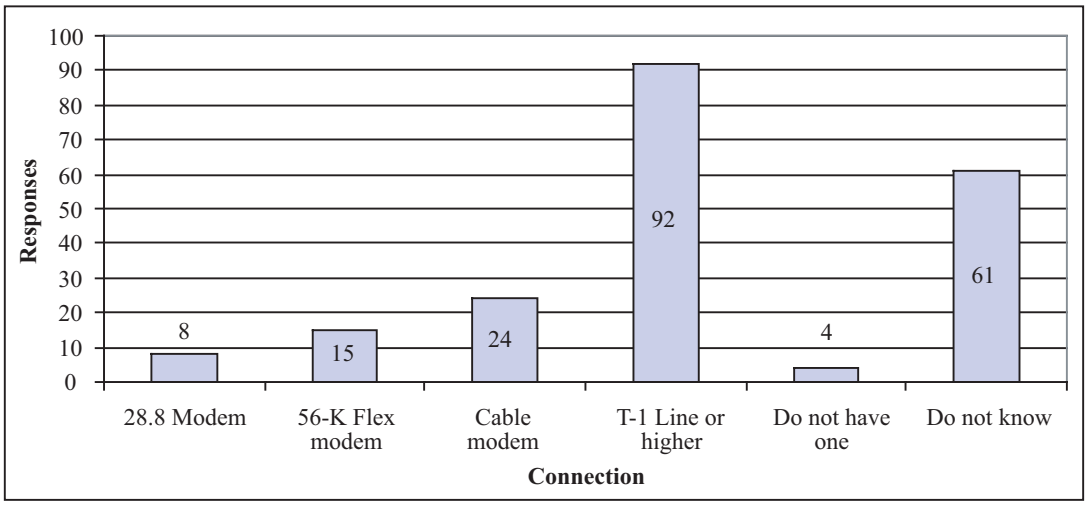


Figure 14. Type of classroom internet connection.

### *Objectives for Student Computer Use*

Survey respondents were given 11 objectives for student computer use and were asked to mark all that applied (fig. 15). One hundred eighty-two (182) selected **higher order thinking skills**. One hundred and seventy-seven (177) selected **finding out about ideas and information**, and one hundred thirty-five (135) selected **improving computer skills**. One hundred thirty-four (134) selected **learning to work independently**. One hundred fifty-seven (157) selected **analyzing information**. One hundred forty-three (143) checked **learning to work collaboratively**. One hundred thirteen (113) checked **remediation of skills**. One hundred forty-one (141) respondents selected **expressing ideas in writing**, and one hundred forty (140) selected **mastering skills just taught**. One hundred thirty-five (135) selected **presenting information to an audience**, and seventy-seven (77) marked **communicating electronically with others**. As with data from 1999–2000 through 2001–2002, **higher order thinking skills** and **finding out about ideas and information** continued to be the most frequently stated objectives for student computer use.

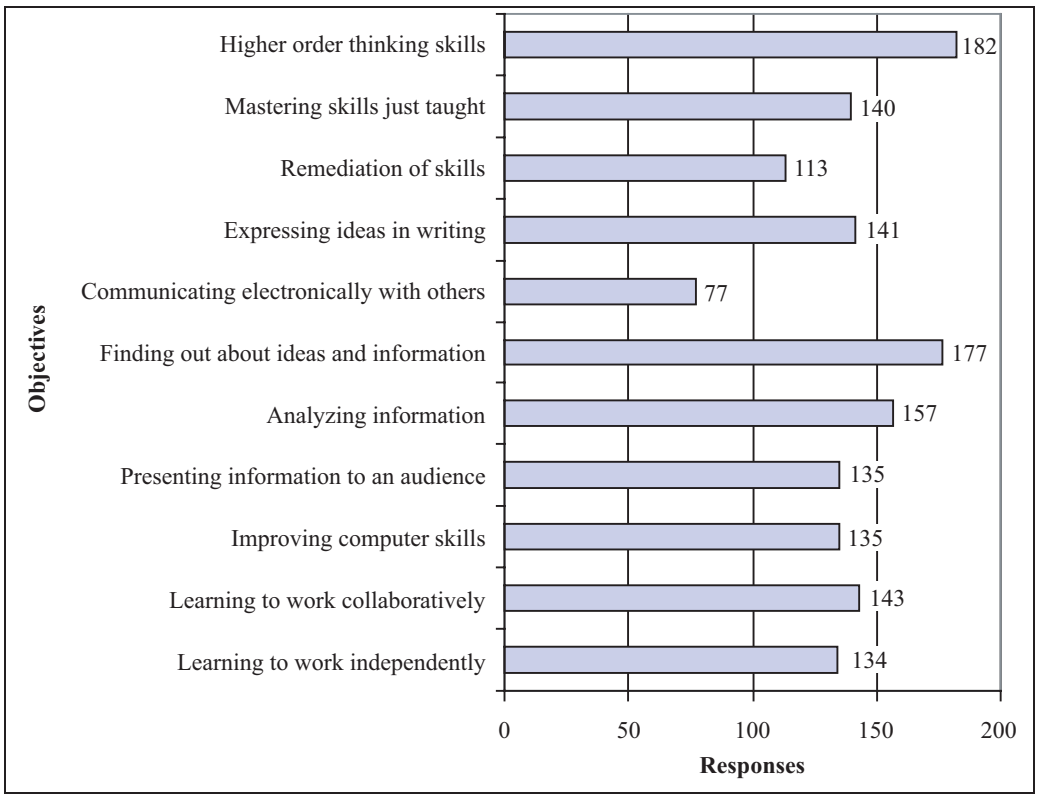


Figure 15. Objectives for student computer use.

### *Educators' Professional Use of Computers*

Educators were asked whether the school-based technology training their schools provided had improved their computer technology skills (table 13). The mean response on the 5-point Likert scale was ($\bar{x}$ = 3.38). The respondents were also asked to identify the ways in which they used computers for lesson preparation or other professional activities and to indicate the frequency of each use. They were to mark all uses that applied.

Table 13. School-Based Training

| Question | Mean | Median | Standard deviation | Min. | Max. | Number of responses (n) |
|---|---|---|---|---|---|---|
| The school-based technology training provided by my school division improved my computer technology skills. | 3.38 | 3.5 | 1.23 | 1 | 5 | 140 |

Min. denotes minimum rating reported.
Max. denotes maximum rating reported.

***To Record or Calculate Student Grades***

Sixteen percent of respondents (n = 208) indicated that they did not use the computer for recording or calculating student grades. Seven percent used the computer for recording or calculating student grades occasionally, 21 percent used the computer for this purpose weekly, and 56 percent used the computer for recording/calculating grades more often than weekly.

***To Make Handouts for Students***

One percent of the respondents (n = 207) reported that they did not use the computer to produce handouts for students, while 15 percent did so occasionally. Thirty-two percent used the computer weekly, and 52 percent used the computer more often than that to make handouts for students.

***To Correspond With Parents***

Of the persons surveyed (n = 205), 19 percent did not use the computer to correspond with parents, while 37 percent used the computer for this purpose occasionally. Twenty-four percent reported that they used the computer for corresponding with parents weekly, and 20 percent reported that they used the computer for this purpose more often than weekly.

***To Write Lesson Plans or Related Notes***

Thirteen percent of the respondents (n = 205) indicated that they did not use the computer to write lesson plans or related notes, while 28 percent did so occasionally. Twenty-nine percent used the computer for writing lesson plans and related notes weekly, and 31 percent used the computer for this purpose more often than on a weekly basis.

***To Get Information or Pictures From Internet for Lesson Use***

One percent of respondents (n = 204) reported that they do not use the computer to get information or pictures from the Internet for use in lessons. Thirty-eight percent of respondents reported occasional use of the computer to get information and pictures from the Internet for lessons, while 24 percent of the respondents used the computer for this purpose on a weekly basis, and 44 percent did so more frequently than that.

***To Use Camcorders, Digital Cameras, or Scanners for Class Preparation***

Twenty-eight percent of respondents (n = 206) reported that they did not use camcorders, digital cameras, or scanners to prepare for their classes. Forty-eight percent of respondents used camcorders, digital cameras, or scanners for class preparation occasionally; 13 percent used them weekly; and 12 percent used the items more frequently than weekly.

***To Exchange Computer Files With Other Teachers***

Fifteen percent of the persons responding (n = 208) reported no use of computers to exchange computer files with other teachers, and 35 percent did so occasionally. Sixteen percent of the respondents used computers to exchange files with other teachers weekly, and 35 percent used computers for this purpose more frequently than weekly.

### *To Post Information on World Wide Web*

Forty-eight percent of the respondents (n = 207) indicated that they did not use the computer to post student work, suggestions for resources, or ideas and opinions on the World Wide Web. Thirty-two percent of the respondents used the computer for posting this kind of information occasionally, while 9 percent reported weekly use for this purpose, and 11 percent reported use more than weekly.

## Interpreting the Findings

Having presented the survey data in the previous section, the next step involves interpreting the data in terms of assessing the quality of NASA CONNECT™. Excluding the survey demographics, interpretations of the findings are presented by topic.

### Topic 1. Instructional Technology and Teaching

Considering the data collected over the past five years, survey respondents continue to take the position that instructional technology enables teachers to be more creative, to teach more effectively, and to effectively accommodate different learning styles. Furthermore, respondents continue to believe in the power of instructional technology to motivate students to learn, and to increase learning and comprehension. Overall, we interpret these findings to mean that survey respondents believe in the power of instructional technology to enhance and enrich the learning process and experience. That belief coincides with the relevant literature and research and would seem to support the large-scale effort on the part of educators to improve school access to educational technology. The 2002–2003 NASA CONNECT™ survey respondents did, however, display a slight reduction in their confidence in all the aforesaid categories during this most recent evaluation cycle; however, the overall mean values for all queries regarding confidence in instructional technology are significantly high.

### Topic 2. Instructional Programming and Technology in Classroom

#### *Instructional Programming*

Respondents appear to agree with the statements that schools have greater access to instructional technology programs and that most of these programs are of good quality. Furthermore, respondents still indicated that these programs can be broken down into teachable units relatively easily and that most of these programs are appropriate for their students (i.e., not too advanced or too basic). Overall, we interpret these findings to mean that survey respondents are satisfied with the quality of the programs but are still concerned with the suitability of instructional programming to meet the instructional needs of their students. One major concern for educators is determining how effective the versatility of instructional programming is when applied to different types of students.

#### *Instructional Technology*

Survey respondents reported that administrators generally support and encourage the use of instructional technology in the classroom, though to a slightly lower degree than last year. As compared to longitudinal data, respondents were slightly more optimistic about classrooms "growing increasingly rich in instructional technology," than in recent years. Respondents' belief that administrators support and encourage teachers to use technology was down from previous years. However, this year's respondent pool gave a lower mean to the technology's availability in the classroom, thus showing a disparity between the existence of technology and the demand for such technology in the classroom. This disparity

is confirmed by additional findings in this survey as well as from national trends. First, in complete symmetry with the last four years' results, respondents once again rated "no or limited access to computers" and "lack of time in the school schedule for technology projects" as the two greatest barriers to integrating instructional technology in the classroom. Research suggests an increasing amount of pressure on administrators, teachers, and students to pass standardized "competency" tests. Conventional wisdom indicates that administrators and educators alike are reluctant to allow or to introduce any instructional resource into the classroom that does not clearly support the state standards. Both of these factors may help explain the differences between a teacher's desire to use technology in the classroom and the availability/usability of such technology within the curriculum.

## Topic 3. Overall NASA CONNECT™ Program Assessment

The overall assessment of NASA CONNECT™ is based on the extent to which survey respondents reported that the 10 objectives established for the series were met. Considering the data from this and previous program years, the stated objectives for the NASA CONNECT™ series are being met. However, there are two areas that appear to be problematic. These areas, grade level appropriateness and ease of integration into a curriculum, are singled out for attention. These two areas have consistently received lower means for every year of the NASA CONNECT™ formal evaluation process. Grades 6–8 are the established grade level(s) for the NASA CONNECT™ series. Given the low score (i.e., rating) received for this objective and considering that this year's score is lower than the previous year's, it might be wise to investigate the "grade level distribution and use" of the NASA CONNECT™ series. It is important to note that due to previous evaluation data, the grade levels established for NASA CONNECT™ changed from 5–8 to 6–8 in 1999–2000. Likewise, given that "ease of integration" received the lowest score for four program years, it might also be wise for program officials to devote both time and resources to further investigating this finding.

## Topic 4. The NASA CONNECT™ Instructional Broadcast

Respondents are divided more or less evenly in terms of "how they use the broadcasts" in the NASA CONNECT™ series. More than 50 percent of respondents use the broadcasts either to (1) *introduce* or (2) *reinforce* a topic, objective, or skill. Similarly, the percentage of respondents who indicated that they taped the broadcasts for later use, as opposed to using the broadcasts when they aired, ranged from 50 percent to 75 percent. Furthermore, although the broadcasts in the 2002–2003 NASA CONNECT™ series were used in grades K–16, they were used with considerably greater frequency in the target grade levels of 6–8. Lastly, when considering a list of 15 "quality" indicators, survey respondents once again gave the instructional broadcasts high marks for artistic, technical, and instructional quality, though responses slightly decreased from previous years. Overall, we interpret these findings to mean that the broadcasts in the NASA CONNECT™ series are (1) being used by educators; (2) being used by educators as an instructional resource; (3) being used predominantly in the intended grades; and (4) are of high artistic, technical, and instructional quality.

## Topic 5. NASA CONNECT™ Educator Guides

The educator guides for the NASA CONNECT™ series contain the applicable standards, objectives, resources, and lesson extensions. Considering the educator guides in the 2002–2003 NASA CONNECT™ series, the usage rate by survey respondents ranged from 36 percent for Program 2 to 16 percent for Program 6. The percentage of "no" responses varied from a high of 25 percent for Program 6 to a low of 13 percent for Program 3. Overall, the percentage of respondents indicating that

they "may use the program in the future" ranged from 60 percent for Program 9, to 43 percent for Program 2. These data are consistent with the findings of previous years and fluctuate only marginally.

Using a 5-point scale (with 5.0 being the highest), respondents were to "rate" the quality of the educator guides on seven (7) "quality" criteria. The "overall" mean quality rating for the guide was 4.14. The quality factors receiving the highest values were the "guides are a valuable instructional aid" (4.26) and the "background portion of the guide" (4.22). The quality factor, "easy to download from the Internet," received the lowest rating (4.05). We interpret these findings to indicate that in addition to the guides being used, the overall quality of the guides is high. Finally, given that the guides are available from the NASA CONNECT™ web site as PDF files, any difficulties encountered downloading the guides from the Internet are best associated with equipment and network considerations or user error and have less to do with the overall quality of the guides.

## Topic 6. NASA CONNECT™ Classroom Activities/Experiments

Each NASA CONNECT™ program includes a hands-on activity or experiment that is designed to reinforce the mathematics, science, and technology concepts included in the instructional program and in the classroom. Considering the hands-on activities in the 2001–2002 NASA CONNECT™ series, the use rate by survey respondents ranged from 7 percent to 25 percent, significantly lower than last year's results. Of those respondents who indicated that they had not used the classroom activities, the responses to the statement, "may use them in the future," ranged from 60 percent to 69 percent.

Using a 5-point scale (with 5.0 being the highest), respondents were asked to "rate" the quality of the classroom activities on each of four "quality" criteria. The "overall" mean quality rating for the classroom activities was 4.05, down slightly from 2001–2002, though somewhat higher than rankings in 2000–2001. The quality factors receiving the highest values were the "activity complemented the lesson" (4.15) and "the classroom activities (experiments) were easy for me to use" (4.04). The quality factor, the "classroom activities (experiments) were easily incorporated into my lesson plan" (3.96) received the lowest rating. These findings indicate that the overall quality of the activities is high; however, we need to identify and rectify problems concerning the ease of incorporating the activities into the classroom curriculum. The factors which have been identified in past years as possible reasons for the difficulty in incorporating the Classroom Activities into the curriculum were (1) the time it takes to conduct the classroom, hands-on activity exceeds available "classroom time," (2) teachers being uncomfortable using hands-on activities, and (3) emphasis being placed on using classroom time to cover only those mathematics, science, and technology concepts included in the various state proficiency tests. In coming years, we should continue to try to reduce the effect of these barriers by improving the quality, usability, and value of the classroom activities.

## Topic 7. NASA CONNECT™ Web-Based Activities

Each NASA CONNECT™ program includes a web-based activity that is designed to reinforce the mathematics, science, and technology concepts included in the instructional program and the classroom and also to provide teachers an opportunity to introduce technology into the classroom. The usage rate for the 2002–2003 NASA CONNECT™ Web-Based Activities ranged from 6 percent to 25 percent. Of the respondents who indicated that they had not used the web-based activities, the responses to the statement, "may use them in the future," ranged from 49 percent to 61 percent. These figures are slightly higher than the usage rate of the web-based activities from the 2001–2002 program series.

Respondents were also asked to report the grade levels of the students using the web-based activities. The largest percentage of students using the web-based activities were seventh and eighth graders, followed by sixth graders, collectively comprising 67 percent of all respondents.

Concerning the quality of the web-based activities, respondents were asked to reply to twelve "quality" criteria. The quality factors receiving the highest values were that "more online activities should be available on the NASA CONNECT™ web site" (4.25) and that the "activities will likely be revisited/ reused" (4.21). When considering the quality factor response, "students were able to complete the web-based activities in a reasonable amount of time" (3.82), we interpret these findings to indicate that the web-based activities are being used significantly more than in previous years, that the overall quality of the web-based activities is high, and that more on-line activities should be added to the NASA CONNECT™ web site.

## Topic 8. NASA CONNECT™ Web Site

Using a 5-point scale (with 5.0 being the highest), respondents were asked to "rate" the quality of the NASA CONNECT™ web site on each of eight (8) "quality" criteria. The "overall" mean quality rating for the NASA CONNECT™ web site was 4.18. These ratings for the 2002–2003 NASA CONNECT™ program year are consistent with the 2001–2002 findings.

## Topic 9. Classroom Environment

### *Instructional Technology Equipment*

Respondents were asked several questions regarding the availability of specific instructional technology equipment (e.g., VCR or DVD player) in their classroom, school, and home to determine the technological landscape of educators. This information may help explain the "use/nonuse" of existing technology-based products and should be taken into consideration when developing the curriculum format for the NASA CONNECT™ series. Most respondents indicated the presence of a TV, VCR, and a computer in their classroom, school, and home. The more expensive equipment (e.g., videoconferencing and laserdisc) was found mostly in the schools, with the newer and more affordable technology (e.g., DVD player) found in the home and to a lesser degree in the school or the classroom. What these results do not tell us is how much training, if any, educators have had using this equipment and the amount of time they have access to a computer or any other technology equipment.

### *Computer Accessories*

Respondents were also asked about the availability of specific computer equipment/accessories in the classroom, school, and home. Again, the answers to these questions depict the existing technology landscape, help explain the "use/nonuse" of existing technology-based products, and help us plan the introduction of additional technology-based products as part of the NASA CONNECT™ series. DVD-ROM drives lag significantly behind CD-ROM drives and internet connections as a computer accessory, and are even less prevalent in the school than in the home.

### *Student Use of Computers*

We attempted to determine the number of computers in the schools and the type of operating system(s) used by these computers. The average number of computers per classroom was 4.43, which indicates a significant increase from last year's mean of only 3.81 and the previous year's 2.82. Most respondents

reported that their systems were PC-based, and the most predominant operating systems used were Windows 98, followed by Windows 2000, and Windows XP. We also wanted to know how often a typical student used a classroom computer in a month. About 36 percent of respondents indicated that a given student used a computer 1 to 5 times a month, 23 percent (down slightly from use in 2001–2002) reported a usage rate of 6 to 10 times a month, and 20 percent reported a usage rate of 11 to 20 times a month. Fourteen percent of respondents indicated that students accessed computers 21 to 40 times per month, up from 9 percent last year. These findings indicate that students are accessing computers considerably more frequently in an educational environment.

***Electronic/Video Field Trip of Videoconference Participation***

In a new inquiry to the 2002–2003 NASA CONNECT™ evaluation, respondents were asked to respond to their participation in videoconferences or electronic/virtual field trips. Since there are no baseline data from our previous evaluations, no comparisons can be made. Thirty-two percent of the respondents indicated they had participated in such activities, while 68 percent indicated they had not.

***Educator Use of Computers***

"The training received by teachers and educators is essential to the success of technology in the classroom" (Thomas, 2000). "Today's teachers are asked to integrate technology and incorporate media into their classes to enhance teaching, while improving student learning. Money is poured into schools to supply labs with state-of-the-art equipment and software. However, all the best intentions in the world are impossible to carry out if teachers are not trained sufficiently, are not comfortable enough with the software and equipment, and do not really believe in the benefits of current technology" (Ariza, Knee, and Ridge, 2000). Acknowledging this reality, respondents were asked several questions about training and computer use. Respondents were asked to rate the helpfulness of the school-based technology training provided by their school or school system. Most reported that the training was moderately helpful. In 2003 Market Data Retrieval found that in 58 percent of schools, at least 90 percent of teachers used computers daily. Respondents to this survey reported that they <u>most often</u> used a computer for such administrative duties as recording/calculating grades and for such educational purposes as searching the Internet for lesson-related material, for preparing lesson plans, and for making handouts for students. Respondents reported that they <u>least often used</u> computers to operate technology-based equipment, to "use camcorders, digital cameras, or scanners to prepare for class," and to post student work assignments on the World Wide Web. These findings are virtually the same as those reported for the 1998–1999, 1999–2000, 2000–2001, and the 2001–2002 NASA CONNECT™ program years, with the exception of an increase in the use of computer technology to exchange files, including e-mail attachments, with other educators.

## Concluding Remarks

A self-reported, electronic survey was sent to individuals randomly selected from the database of NASA CONNECT™ registrants. Based on the responses, the following facts have been established for the 2002–2003 NASA CONNECT™ program year. NASA CONNECT™ is an instructional resource that is designed to integrate mathematics, science, and technology in grades 6–8.

According to survey respondents, educators view NASA CONNECT™ as a beneficial instructional resource. Respondents report that (1) the instructional broadcast is most often taped for use at a later date rather than being used "live"; (2) some parts of a NASA CONNECT™ program are used more frequently than other parts; and (3) NASA CONNECT™ is used most often to reinforce topics, objectives, or skills.

Furthermore, it appears that the changes/improvements that were implemented as a result of the 1998–1999, 1999–2000, 2000–2001, and 2001–2002 evaluations were well received by NASA CONNECT™ registrants. However, 49 percent of respondents indicated that they experienced difficulties obtaining one or more of the programs in the 2002–2003 NASA CONNECT™ series. There is no way to know exactly what type of difficulty these respondents experienced because there are no follow-up questions on this topic. The 2002–2003 NASA CONNECT™ data led evaluators to conclude that the activities are educationally sound and offer educators and students a complete and valuable educational suite.

Lastly, there was a concern that became apparent in the 2001–2002 NASA CONNECT™ evaluation results that needed to be sternly addressed. This concern involved the steady decrease in returned surveys from one year to the next. Steps taken to rectify this problem included alteration in the delivery method of the evaluation survey. Specifically, this year became the first in which an electronic format was used to circulate the evaluation survey. Although presenting the survey electronically accounts for a substantial increase in respondents, it also may possibly explain the degree of variation in this year's data. One may assume that the electronic format targeted more web-savvy respondents; however, we cannot corroborate such an assumption from our findings in the demographics for the 2002–2003 NASA CONNECT™ season evaluation because this year's respondents were aligned closely in age, gender, location, and race, and the results corresponded with national statistics and previous evaluations. Collectively, the survey data support the continued production of NASA CONNECT™.

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# Appendix A



## NASA CONNECT™ Evaluation

NASA CONNECT™ is a research-based, Emmy®-award-winning, standards-based, integrated mathematics, science, and technology distance learning program for grades 6-8 produced by the NASA Langley Research Center, Hampton, VA.

Please confirm the following information:

First Name _____
Last Name _____
Address _____
City _____
State _____
Zip _____
Email _____

**Instructional Technology and Teaching**

Please indicate the extent to which you disagree or agree with the following statements about instructional technology and classroom teaching. ***Please circle your answers.***

**1.** Enables teachers to teach more effectively. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**2.** Enables teachers to accommodate different teaching styles. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**3.** Enables teachers to be more creative. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**4.** Increases student learning comprehension. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**5.** Increases student willingness to discuss content/exchange ideas. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**6.** Increases student motivation and enthusiasm. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**7.** Is effective with virtually all types of students. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**Instructional Programming and Technology in the Classroom**

Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology. ***Please circle your answers.***

**8.** Increasingly, schools have greater access to instructional programs. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**9.** Most of these programs are of good quality. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**10.** Most of these programs are appropriate (i.e., not too advanced or too basic) for my students. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**11.** The majority of these programs are easily broken into "teachable" units. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**12.** Administrators support and encourage teachers to use instructional technology in the classroom. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**13.** Classrooms are growing increasingly rich in instructional technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**14.** Teachers are generally positive about introducing/using instructional technology in the classroom. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**15.** Which of the following factors are barriers to integrating technology into your instructional program? ***Check all that apply.***

____ **Not enough or limited access to computers**

____ **Not enough computer software**

____ **Purchased software has not been installed**

____ **Lack of time in school schedule for technology projects**

____ **Lack of technical support for technology projects**

____ **Lack of teacher training opportunities for technical projects**

____ **Lack of knowledge concerning methods of integrating technology into the curriculum**

**16.** Do you use instructional programming in your classroom?

____ **Yes**

____ **No - Go to Q21**

**17.** Compared to other instructional programming, the quality of NASA CONNECT™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

**18.** Compared to the curriculum/lesson guides in other instructional programming, the quality of the NASA CONNECT™ curriculum/lesson guides is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

**19.** Compared to the video in other instructional programming, the quality of the video in NASA CONNECT™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

**20.** Compared to the web-based activities in other instructional programming, the quality of the web-based activities in NASA CONNECT™ is

____ **Better than average**

____ **About average**

____ **Worse than average**

____ **I'm unable to judge**

**Technology/Video Programs**

The following questions pertain to the nine programs in the 2002-2003 NASA CONNECT™ series.

**21.** Did you use the following programs? ***Please check your responses for Questions 21–25.***

| Program | Yes | No | No, but I may in the future |
|---|---|---|---|
| **1. Geometry of Algebra: The Future Flight Equation** | ___ | ___ | ___ |
| **2. The Centennial of Flight Special Edition: Problem Solving: The "Wright" Math** | ___ | ___ | ___ |
| **3. Data Analysis and Measurement: Having a Solar Blast** | ___ | ___ | ___ |
| **4. Measurement, Ratios, and Graphing: Who Added the "Micro" to Gravity?** | ___ | ___ | ___ |
| **5. Functions and Statistics: Dressed for Space** | ___ | ___ | ___ |
| **6. Special Edition: World Space Congress 2002: The New Face of Space** | ___ | ___ | ___ |
| **7. Measurement, Ratios, and Graphing: Safety First** | ___ | ___ | ___ |
| **8. Data Analysis and Measurement: Dancing in the Night Sky** | ___ | ___ | ___ |
| **9. Festival of Flight Special: Opening Space for Next Generation Explorers** | ___ | ___ | ___ |

**22.** If you selected "yes," please indicate how these programs were viewed. ***Please check.***

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **a. To introduce a curriculum topic, objective, or skill** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **b. To reinforce a curriculum topic, objective, or skill** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **c. As a special interest topic** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **d. As a break from classroom routine** | __ | __ | __ | __ | __ | __ | __ | __ | __ |

**23.** If you selected "yes," for question 21, please indicate how these programs were viewed. ***Please check.***

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **a. Live** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **b. Taped** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **c. Both** | __ | __ | __ | __ | __ | __ | __ | __ | __ |
| **d. Not viewed** | __ | __ | __ | __ | __ | __ | __ | __ | __ |

**24.** How did you receive the programs? ***Please check.***

| | Yes | No |
|---|---|---|
| **1. PBS/ITV** | ___ | ___ |
| **2. Downloaded it** | ___ | ___ |
| **3. Media Specialist taped it** | ___ | ___ |
| **4. I or someone else taped it** | ___ | ___ |
| **5. NASA sent me the tapes** | ___ | ___ |
| **6. Other** | _____ | |

**25.** Did you experience difficulty obtaining any of the programs in the 2002–2003 NASA CONNECT™ series? ***Please check.***

____ **Yes**

____ **No**

**26.** If you selected "yes" for question 16, please indicate the grade level(s) that viewed the programs. ***Please circle your answers.***

K 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Please indicate the extent to which you disagree or agree with the following statements concerning the nine programs in the 2002–2003 NASA CONNECT™ series. ***Please circle your answers.***

**27.** The programs were of good artistic quality. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**28.** The programs were of good technical quality. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**29.** The programs enabled me to accommodate different learning styles. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**30.** The programs increased student willingness to discuss/exchange ideas. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**31.** The programs increased student enthusiasm for learning. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**32.** The programs were effective with virtually all types of students. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**33.** The programs were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**34.** The programs were developmentally appropriate for the grade level. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**35.** The programs were easily incorporated into the curriculum. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**36.** The programs enhanced the integration of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**37.** The programs raised student awareness of careers that require mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**38.** The programs demonstrated the application of mathematics, science, and technology on the job. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**39.** The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**40.** The programs illustrated the integration of workplace mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**41.** The programs presented women and minorities performing challenging engineering and scientific tasks. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**42.** The programs formed a positive link between the classroom activity and the web-based activity. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**Educator Guides**

Please indicate the extent to which you disagree or agree with the following statements concerning the printed educator guides for the nine programs in the 2002–2003 NASA CONNECT™ series.

**43.** Did you use the following programs? ***Please check.***

| Program | Yes | No | No, but I may in the future |
|---|---|---|---|
| **1. Geometry of Algebra: The Future Flight Equation** | ___ | ___ | ___ |
| **2. The Centennial of Flight Special Edition: Problem Solving: The "Wright" Math** | ___ | ___ | ___ |
| **3. Data Analysis and Measurement: Having a Solar Blast** | ___ | ___ | ___ |
| **4. Measurement, Ratios, and Graphing: Who Added the "Micro" to Gravity?** | ___ | ___ | ___ |

**5. Functions and Statistics: Dressed for Space** ___ ___ ___

**6. Special Edition: World Space Congress 2002: The New Face of Space** ___ ___ ___

**7. Measurement, Ratios, and Graphing: Safety First** ___ ___ ___

**8. Data Analysis and Measurement: Dancing in the Night Sky** ___ ___ ___

**9. Festival of Flight Special: Opening Space for Next Generation Explorers** ___ ___ ___

**44.** If no, please explain and then proceed to Question 54.

**45.** The directions/instructions in the educator guides were easily understood. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**46.** The layout of the educator guides presented the information clearly. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**47.** The educator guides were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**48.** The print and electronic resources in the educator guide were a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**49.** The cue cards provided a positive link between the video and the educator guide. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**50.** The teacher "background" portion of the educator guide was a valuable instructional aid. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**51.** The educator guide was easy to download from the Internet. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**52.** If the educator guides were only available in electronic format,

| | Yes | No |
|---|---|---|
| **could you use them on CD-ROM?** | ___ | ___ |
| **could you use them on DVD?** | ___ | ___ |
| **would you use them on CD-ROM?** | ___ | ___ |
| **would you use them on DVD?** | ___ | ___ |

**53.** Please add any other comments you have concerning the educator guides.

**Classroom Activity**

Please indicate the extent to which you disagree or agree with the following statements concerning the nine classroom activities used in the 2002–2003 NASA CONNECT™ series.

**54.** Did you use the classroom activity for the following programs? ***Please check.***

| Program | Yes | No | No, but I may in the future |
|---|---|---|---|
| **1. Geometry of Algebra: The Future Flight Equation** | ___ | ___ | ___ |
| **2. The Centennial of Flight Special Edition: Problem Solving: The "Wright" Math** | ___ | ___ | ___ |
| **3. Data Analysis and Measurement: Having a Solar Blast** | ___ | ___ | ___ |
| **4. Measurement, Ratios, and Graphing: Who Added the "Micro" to Gravity?** | ___ | ___ | ___ |
| **5. Functions and Statistics: Dressed for Space** | ___ | ___ | ___ |
| **6. Special Edition: World Space Congress 2002: The New Face of Space** | ___ | ___ | ___ |
| **7. Measurement, Ratios, and Graphing: Safety First** | ___ | ___ | ___ |
| **8. Data Analysis and Measurement: Dancing in the Night Sky** | ___ | ___ | ___ |
| **9. Festival of Flight Special: Opening Space for Next Generation Explorers** | ___ | ___ | ___ |

**55.** If no, please explain and then proceed to Question 61.

**56.** The classroom activity (experiment) was easily incorporated into my lesson plan. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**57.** The classroom activity (experiment) complemented the lesson for each show. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**58.** The classroom activity (experiment) was developmentally appropriate for the grade level. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**59.** The classroom activity (experiments) were easy for me to use. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**60.** Please add any other comments you have concerning the classroom activity:

**Web-Based Activity**

Please indicate the extent to which you disagree or agree with the following statements concerning the online activities posted on the 2002–2003 NASA CONNECT™ web site.

**61.** Did you use the following programs? ***Please check.***

| Program | Yes | No | No, but I may in the future |
|---|---|---|---|
| **1. Geometry of Algebra: The Future Flight Equation** | ___ | ___ | ___ |
| **2. The Centennial of Flight Special Edition: Problem Solving: The "Wright" Math** | ___ | ___ | ___ |
| **3. Data Analysis and Measurement: Having a Solar Blast** | ___ | ___ | ___ |
| **4. Measurement, Ratios, and Graphing: Who Added the "Micro" to Gravity?** | ___ | ___ | ___ |
| **5. Functions and Statistics: Dressed for Space** | ___ | ___ | ___ |

**6. Special Edition: World Space Congress 2002: The New Face of Space** ___ ___ ___

**7. Measurement, Ratios, and Graphing: Safety First** ___ ___ ___

**8. Data Analysis and Measurement: Dancing in the Night Sky** ___ ___ ___

**9. Festival of Flight Special: Opening Space for Next Generation Explorers** ___ ___ ___

**62.** If no, please explain and then proceed to Question 79.

**63.** If yes, approximately how many times?

**64.** The content of the web-based activities was easily integrated into the curriculum. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**65.** The content of the web-based activities enhanced the integration of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**66.** The web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**67.** If you selected "yes" for Question 61, please indicate the grade level that used the web-based activity. ***Please circle your answers.***

K 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**68.** Students were able to complete the web-based activities in a reasonable amount of time. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**69.** The web-based activities accommodated various learning styles. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**70.** The content for the web-based activities was appropriate for my students. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**71.** The graphics for the web-based activities were appropriate for my students. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**72.** The web-based activities enhanced the integration of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**73.** The web-based activities had a good balance of text and graphics. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**74.** The web-based activities allowed my students to work at their own pace. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**75.** The web-based activities will likely be revisited/reused. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**76.** More online activities should be available on the NASA CONNECT™ web site. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**77.** Did you or your students use Dan's Domain?

**____ Yes**

**____ No**

**NASA CONNECT™ Web Site**

The following questions pertain to the web site for the 2002–2003 NASA CONNECT™ series. Please circle your answers to indicate the extent to which you disagree or agree with the following statements.

**78.** Please add any other comments you have concerning the web-based activity.

**79.** The NASA CONNECT™ web site is visually appealing. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**80.** There is a good balance between text and graphics on the web site. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**81.** The web site is easily navigated. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**82.** When viewed on my monitor, the web site is clearly legible. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**83.** The web site is designed so that printouts of individual pages are legible. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**84.** Pages within the web site downloaded quickly. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**85.** The page lengths are appropriate. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**86.** The links to other site/pages are current. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**Overall Assessment**

Please indicate the extent to which you disagree or agree with the following statements concerning the nine programs in the 2002–2003 NASA CONNECT™ series.

**87.** The program met their stated objectives. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**88.** The program content was developmentally appropriate for the grade level. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**89.** The program content was aligned with the national mathematics, science, and technology standards. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**90.** The program content was easily integrated into the curriculum. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**91.** The program content enhanced the teaching of mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**92.** The programs raised student awareness about careers that require mathematics, science, and technology. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**93.** The programs presented the application of mathematics, science, and technology on the job. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**94.** The programs presented workplace mathematics, science, and technology as a collaborative process. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**95.** The programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**96.** The programs presented women and minorities performing challenging science and engineering tasks. (1=strongly disagree; 5=strongly agree)

**1 2 3 4 5 No Opinion**

**97.** Have you recommended NASA CONNECT™ to a colleague?

**____ Yes**

**____ No**

**98.** One goal of NASA CONNECT™ is to educate and inform others about what NASA does. Do you think NASA CONNECT™ has been successful in this regard?

____ **Yes**

____ **No**

**99.** In your opinion is the information about NASA contained in NASA CONNECT™

____ **Very credible**

____ **Somewhat credible**

____ **Not credible**

____ **I'm unable to judge**

**Computers and Associated Technology**

The following questions pertain to your classroom, your school, and your home.

**100.** Do you have the following equipment in your _____? ***Please check all that apply.***

| | Classroom | School | Home |
|---|---|---|---|
| **Television** | ____ | ____ | ____ |
| **VCR** | ____ | ____ | ____ |
| **Video Camera** | ____ | ____ | ____ |
| **Laserdisc Player** | ____ | ____ | ____ |
| **Computer** | ____ | ____ | ____ |
| **DVD** | ____ | ____ | ____ |
| **Videoconferencing** | ____ | ____ | ____ |

**101.** Does your school or home computer have the following? ***Please check all that apply.***

| | School | Home |
|---|---|---|
| **CD-ROM** | ____ | ____ |
| **Internet connection** | ____ | ____ |
| **DVD** | ____ | ____ |

**102.** How many computers are in your classroom? _____ (If "0," please proceed to question 107.)

**103.** The operating system used on your classroom computer is

____ **Windows XP**
____ **Windows 2000**
____ **Windows ME**
____ **Windows 98**
____ **Windows 95**
____ **Windows 3.1x**
____ **Mac OS X**
____ **Mac OS 9.x**
____ **Mac OS 8.x**
____ **Other**
____ **I don't know**

**104.** Have you and your students ever participated in an Electronic/Virtual field trip or videoconference?

____ **Yes**
____ **No**

**105.** In a given month, about how many times does a typical student use a computer in your class? ***Please check.***

____ **1–5**
____ **6–10**
____ **11–20**
____ **21–40**
____ **41+**

**106.** Generally speaking, how do the students operate the computers in your classroom?

____ **One student per computer**
____ **In pairs (2)**
____ **In groups of 3–5**
____ **In a class**
____ **Other**

**107.** My classroom connection to the Internet uses a _____? ***Please check.***

____ **28.8 modem**

____ **56-K flex modem**

____ **cable modem**

____ **T-1 line or higher**

____ **Do not have one**

____ **Do not know**

**108.** The school-based technology training provided by my school division improved my computer technology skills. ***Please circle your answer.***

**1 2 3 4 5 No school-based training provided No Opinion**

**109.** Which of the following are among the objectives you have for student computer use? ***Please check all that apply.***

____ **Higher order thinking skills**

____ **Mastering skills just taught**

____ **Remediation of skills not learned well**

____ **Expressing ideas in writing**

____ **Communicating electronically with others**

____ **Finding out about ideas and information**

____ **Analyzing information**

____ **Presenting information to an audience**

____ **Improving computer skills**

____ **Learning to work collaboratively**

____ **Learning to work independently**

____ **Other**

**110.** In which of these ways do you use computers to prepare lessons or in other professional activities? ***Please check.***

**a.** To record or calculate student grades

____ **Do not use**

____ **Occasionally**

____ **Weekly**

____ **More often**

**b.** To make handouts for students

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**c.** To correspond with parents

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**d.** To write lesson plans or related notes

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**e.** To get information or pictures from the Internet for use in lessons

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**f.** To use camcorders, digital cameras, or scanners to prepare for class

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**g.** To exchange computer files with other teachers (including e-mail and attachments)

____ **Do not use**
____ **Occasionally**
____ **Weekly**
____ **More often**

**h.** To post student work, suggestions for resources, or ideas and opinions on the World Wide Web

____ **Do not use**

____ **Occasionally**

____ **Weekly**

____ **More often**

**Demographics**

These questions will be used to determine whether survey respondents with different backgrounds and characteristics have different opinions regarding instructional technology and NASA CONNECT™. ***Please check the appropriate response.***

**111.** Gender?

____ **Female**

____ **Male**

**112.** Present professional duties? ***Please check all that apply.***

____ **Teacher**

____ **Home Schooler**

____ **Technology Program Coordinator**

____ **Principal**

____ **Math Coordinator**

____ **Science Coordinator**

____ **Librarian/Media Specialist**

____ **Community College Instructor**

____ **College/University Instructor**

____ **Distance Learning Coordinator**

____ **Curriculum Coordinator**

____ **Other**

**113.** School type? ***Please check only one.***

____ **Public**
____ **Private/Parochial**
____ **Native American School**
____ **Home School**
____ **Community College**
____ **College/University**

**114.** School Location? ***Please check only one.***

____ **Rural**
____ **Suburban**
____ **Urban**

**115.** Highest Degree?

____ **High School Diploma**
____ **Associate's (2-Year)**
____ **Baccalaureate (BA/BS)**
____ **Master's/Master's Equivalency**
____ **Education Specialist**
____ **Doctorate**

**116.** Ethnicity? ***Please check only one.***

____ **African American**
____ **Asian**
____ **Caucasian**
____ **Hispanic**
____ **Native American**
____ **Pacific Islander**
____ **Other**

**117.** How many years have you been a professional educator or home schooler? _____

**118.** Your age. _____

**119.** Do you own a personal computer?

____ **Yes**
____ **No**

**120.** Are you a member of a professional (national) education organization (e.g., ASDC, NMSA, NCTM, NSTA)?

____ **Yes**

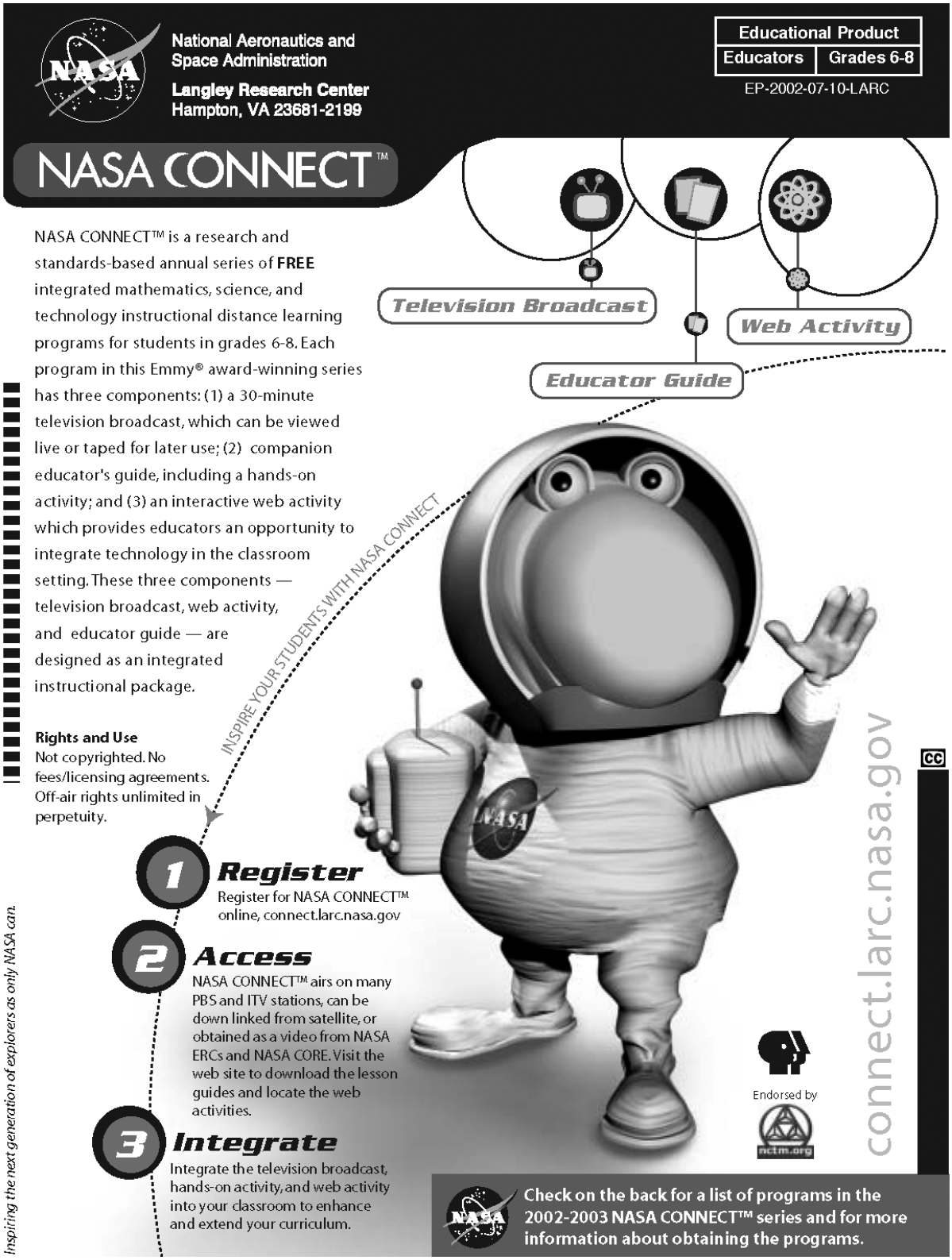
____ **No**

**121.** Number of years you have used NASA CONNECT™. _____

Thank you for your time in completing this survey. Your input is very valuable to us and will help us improve the quality of NASA CONNECT™.

Responsible NASA Official: Dr. Thomas E. Pinelli
Page Curator: Clyde Lewis
*Last Updated: July 10, 2003*
*Privacy Policy*

# Appendix B


National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199
Educational Product
Educators
Grades 6-8
EP-2002-07-10-LARC
NASA CONNECT™
NASA CONNECT™ is a research and standards-based annual series of FREE integrated mathematics, science, and technology instructional distance learning programs for students in grades 6-8. Each program in this Emmy® award-winning series has three components: (1) a 30-minute television broadcast, which can be viewed live or taped for later use; (2) companion educator's guide, including a hands-on activity; and (3) an interactive web activity which provides educators an opportunity to integrate technology in the classroom setting. These three components — television broadcast, web activity, and educator guide — are designed as an integrated instructional package.
Television Broadcast
Web Activity
Educator Guide
INSPIRE YOUR STUDENTS WITH NASA CONNECT
Rights and Use
Not copyrighted. No fees/licensing agreements. Off-air rights unlimited in perpetuity.
1 Register
Register for NASA CONNECT™ online, connect.larc.nasa.gov
2 Access
NASA CONNECT™ airs on many PBS and ITV stations, can be down linked from satellite, or obtained as a video from NASA ERCs and NASA CORE. Visit the web site to download the lesson guides and locate the web activities.
3 Integrate
Integrate the television broadcast, hands-on activity, and web activity into your classroom to enhance and extend your curriculum.
Endorsed by
nctm.org
connect.larc.nasa.gov
Inspiring the next generation of explorers as only NASA can.
Check on the back for a list of programs in the 2002-2003 NASA CONNECT™ series and for more information about obtaining the programs.

# NASA CONNECT™
**2002-2003 Season**

## 1 Register

Register online at connect.larc.nasa.gov

## 2 Access

**How can I get the television broadcast?**

- The programs are uplinked in KU and C-band. The satellite coordinates are listed on the NASA CONNECT™ web site.
- NASA CONNECT™ programs air on PBS, NASA TV, Channel One, and on many Cable Access Channels. Check our web site for viewing in your locality.
- Programs are available on the web through NASA's Learning Technologies Channel,**http://quest.arc.nasa.gov/ltc/special/connect/index.html**.
- Video copies of the broadcast can be obtained from the NASA Educator Resource Center in your state,**http://education.nasa.gov/ercn**, or from the NASA Central Operation of Resources for Educators, **http://core.nasa.gov**.

**Visit the web site, http://connect.larc.nasa.gov to download the lesson guides and access the web activities.**

## 3 Integrate

Integrate NASA CONNECT™ into your classroom to enhance and extend your curriculum.

**GEOMETRY AND ALGEBRA: The Future Flight Equation (R)**

**Starts airing:** Sept. 26, 2002, 11- 11:30 a.m. EDT

NASA engineers and researchers use geometry and algebra to design, develop, and test aircraft.

**Mathematics Standards:** Algebra, Geometry

**Science Standards:** Science as Inquiry, Physical Science, Science and Technology

**Technology Standards:** Nature of Technology, Design

**The Centennial of Flight Special Edition: PROBLEM SOLVING: The "Wright" Math**

**Starts airing:** Oct. 17, 2002, 11- 11:30 a.m. EDT

NASA engineers and researchers use problem-solving skills to develop advanced aerospace vehicles .

**Mathematics Standards:** Problem Solving

**Science Standards:** Science as Inquiry, Science and Technology, History and Nature of Science

**Technology Standards:** Technology and Society, Design, Abilities for a Technological World

**DATA ANALYSIS AND MEASUREMENT: Having a Solar Blast! (R)**

**Starts airing:** Nov. 21, 2002, 11- 11:30 a.m. EST

NASA engineers and researchers use data analysis and measurement to predict solar storms, anticipate how they will affect the Earth, and improve our understanding of the Sun-Earth system.

**Mathematics Standards:** Data analysis, Measurement

**Science Standards:** Science as Inquiry, Earth and Space Science, Science and Technology, History and Nature of Science

**Technology Standards:** Nature of Technology, Technology and Society

**MEASUREMENT, RATIOS, AND GRAPHING: Who Added the "Micro" to Gravity?**

**Starts airing:** Dec.12, 2002, 11- 11:30 a.m. EST

NASA researchers and scientists use measurement, ratios, and graphing to demonstrate the principles of microgravity.

**Mathematics Standards:** Measurement, Ratios, Graphing

**Science Standards:** Science as Inquiry, Physical Science, Science and Technology

**Technology Standards:** Nature of Technology, Technology and Society

**FUNCTIONS AND STATISTICS: Dressed for Space (R)**

**Starts airing:** Jan. 23, 2003, 11- 11:30 a.m. EST

NASA engineers and researchers use functions and statistics to create the next generation of spacesuits for the International Space Station and beyond.

**Mathematics Standards:** Functions, Statistics

**Science Standards:** Science as Inquiry, Science and Technology, History and Nature of Science

**Technology Standards:** Design, Abilities for a Technological World

**Special Edition: WORLD SPACE CONGRESS 2002: The New Face of Space**

**Starts airing:** Feb. 20, 2003, 11- 11:30 a.m. EST

The World Space Congress 2002 is the "meeting of the decade for space professionals." From the discovery of distant planets to medical advancements, from geological exploration to urban planning, from water on Mars to energy sources in developing nations, you'll find it all here.

**Mathematics Standards:** Problem Solving

**Science Standards:** Science as Inquiry, Earth and Space Science, Science and Technology, History and Nature of Science

**Technology Standards:** Technology and Society

**MEASUREMENT, RATIOS, AND GRAPHING: Safety First (R)**

**Starts airing:** Mar. 20, 2003, 11- 11:30 a.m. EST

NASA engineers and researchers use measurement, ratios, and graphing to maintain aviation safety and to develop new technologies to meet the growing demands – keeping you safe in tomorrow's skies.

**Mathematics Standards:** Measurement, Ratios, Graphing

**Science Standards:** Science as Inquiry, Science and Technology, Science in Personal and Social Perspectives

**Technology Standards:** Nature of Technology, Technology and Society

**DATA ANALYSIS AND MEASUREMENT: Dancing in the Night Sky**

**Starts airing:** April 10, 2003, 11- 11:30 a.m. EST

NASA engineers and researchers use data analysis and measurement to study the auroras, key regions of the Earth's geospace or space environment.

**Mathematics Standards:** Data Analysis, Measurement

**Science Standards:** Science as Inquiry, Earth and Space Science, Science and Technology

**Technology Standards:** Nature of Technology, Technology and Society

**FESTIVAL OF FLIGHT SPECIAL: Opening Space for Next Generation Explorers**

**Starts airing:** May 15, 2003, 11- 11:30 a.m. EST

NASA's Space Launch Initiative (SLI) Program will ultimately move the nation from the explorations of the Mercury, Gemini, Apollo, and Space Shuttle missions to a new period of pioneering when people and businesses are more routinely traveling, working, and living in space.

**Mathematics Standards:** Algebra, Geometry, Problem Solving

**Science Standards:** Science as Inquiry, Physical Science, Science and Technology

**Technology Standards:** Nature of Technology, Design

**(R) Indicates a repeat program from the 2001-2002 season.** CC

*Inspiring the next generation of explorers as only NASA can.*

2002-2003 Season. Grades 6-8. http://connect.larc.nasa.gov

## Appendix C

*The responses below were given as "other" means by which respondents received the program.*

| |
|---|
| The difficulty is knowing the content of the video in order to know which videos to request directly from NASA. |
| NASA S'COOL |
| we did not watch the programming - only the activity |
| I was unable to view any this year due to the blocks put on our district internet. We are hoping that is fixed for next year. I used other instructional programming. |
| We do not get NASA programming on our local cable. |
| I was unable to download them from my computer. I requested help by email and never received it. |
| Satellite. NASA sent us the coordinates |
| I waited for them to be broadcast by the local JC - our PBS stations don't carry them - I wish they did. |
| I could not tape them. I would like to buy them. |
| Our media specialist tried to download these for me, but was unable to locate the satellite broadcast on either band given. I did not try checking with my local PBS station. |
| I'm having trouble getting the programs. |
| I would like to receive them |
| I did not use the program. I went to the web site to preview it, but I could not get to parts of it because of our web filtering. It considered the program "entertainment." |
| A math teacher let me see them. |
| This was the problem: Could not locate program. |
| We have direct-TV and couldn't get the program from the coordinates given. |
| Saw a preview...haven't rec'd yet...looking forward to making use of material |
| I TAPE FROM MY SATELLITE AT HOME. |
| I received information and was put on email at NABE in January. |
| Whenever I receive programs for other areas I forward them and that particular teacher uses them. Anything pertaining to Medicine or Health I definitely use myself or share with the Health teacher. |
| ITFS closed-circuit |
| hardcopy of lessons |
| Taped version not available to me |
| Could not receive or missed the program |
| I didn't know how to get tapes, so I just used some lesson plans from the web site. |
| There are serious quality problems when programs are downloaded via satellite. I am certain that a video or CD would provide better quality and hence be used more. CD images can be enlarged through various technology equipment that we have. |
| PLEASE SEND TAPES!!!! |
| NASA sent me the lesson plans. |
| Was unable to gain access to any of the programs |
| NASA sent me a mail copy. |

*Upon prompting respondents as to why they did **not** use the program, the answers below were received.*

| |
|---|
| I did not have them here at the school. |
| I use others and have not had the time to incorporate more. |
| I was unable to access your programs, either because I didn't understand where to find them or because they weren't available on my PBS station. I am confused. Where do I get your programs? |
| I cannot find the programs to tape. I was not allowed to use the program for math enrichment this year, but I hope to in the future—change of administration. |
| I was only sent one tape this year by NASA. In the past I have received all the tapes and TE. I really missed them this year as they are excellent to use with my Gifted 4th and 5th Graders. I would really like to be put back on the mailing list to receive these tapes in the future. I had been in contact with Jessie, but when she left the program, she gave me Sarah Jordan's name, but Sarah didn't respond to my communications. Please see if I can receive the materials from 2002-2003 because all of NASA's materials are far superior to any of my other materials. |
| Not enough time this year, but I did not receive all listed programs. |
| There was no time. Will use later. |
| Found out too late about the program |
| I pass them onto the classroom teachers. |
| See no. 24 |
| I have been unable to actually acquire the programs. |
| I am answering the questions as well as possible. I have not received any information on the programs nor the programs themselves. I would love to review the material and possibly incorporate the programs into both my math and Earth Science class. |
| haven't done that one yet |
| lack of time to incorporate thoroughly, but will use more since I am more familiar with the material. |
| I did not have time in the curriculum. My district does not encourage integrated lessons. |
| Tailored STARBASE curriculum. |
| I was not able to tape all of the programs. Also, I teach 5 different courses, which makes planning a challenge (time). |
| I am not sure how to take advantage of what NASA CONNECT has to offer. |
| Could not receive program...given too little notice |
| I teach Gifted and Talented students. Our topics rotate every four years. Next year is space. |
| will not have time to incorporate it into my lessons |
| I do not have any NASA Connect software. |
| sometimes, the program and district or state guidelines don't match |
| didn't get some of them and others didn't come in time for the lesson |
| No time to integrate them into curriculum. Also a bit advanced for fifth grade. |
| Time Constraints |
| We do not have easy access to a satellite feed. I was not able to tape any of the programs. |
| I didn't have any way to receive the video. I now know that NASA will send me the videos. Would you please send me information on how to receive them? |
| I would like to receive them |
| I did not use the program this year. |

| |
|---|
| A math teacher let me look at them |
| Would like a schedule in advance to tape programs. |
| I used them all |
| Didn't use program |
| Didn't have them |
| next year |
| same as above |
| Some were not received in the post... |

*Upon prompting respondents as to why they did **not** use the program, the answers below were received.*

| |
|---|
| no opportunity |
| does not fit curriculum |
| time constraints |
| I'm not good in math myself. |
| I was a resource teacher and not a classroom teacher. |
| I did not teach math or science this school year. |
| unavailable |
| Did not need them for what we used. Will use them in the future. |
| I was involved with so many other projects that I was not able to attend to this. |
| Right now I am full-time doctoral student. |
| I just schedule the programs over ITFS closed-circuit for teachers/librarians to use. This evaluation has been forwarded on to the schools. |
| Not enough time to cover these areas. |
| These topics were not requested by our teachers this past school year |
| Brand new school–slowly getting things implemented. |
| These guides are not on topics that fit the curriculum for my state/grade level. |
| We were unable to tape the programs due to time constraints. I very much want to use the programs and hope to purchase them if necessary. |
| I was unable to catch the programs on TV as I could not locate the channel that broadcasted the programs and the broadcast times. |
| Problems with satellite. |
| New curriculum this year, no time. I need to match the programs with appropriate units within our new lessons. |
| We are unable to obtain the NASA series from the NASA channel. Our technology experts are unaware of this series and its availability. I have referred emails concerning this series and its availability to no avail. |
| The material mailed to me looks excellent, but I did not take the time to get the video portion and put it all together for my classes. I will try harder this year. |
| I team teach in a special education classroom. Due to organizational changes it was not possible to use the programs. |
| did not teach this year |

| |
|---|
| This is the first year that I have taught astronomy to fifth grade. We adopted a literacy program this year that made it difficult to integrate science and math during the adoption period. I am a SDAIE teacher. I plan to review the entire selection this summer and, provided I return to my classroom (pink-slip pending), I will use any appropriate activities from NASA in an expanded math, science, technology format. We are also applying for the Astronomer in the Schools program, which was suggested by NASA. Finally, our school district does not have reliable facilities for regularly viewing NASA video via KQED. I checked with our Vice Principal about this. He said something about getting rabbit ears for the monitor, which I use occasionally as a VCR. I haven't had a chance to try that method out. |
| I did not use any of the programs this year because the PBS feed is shown in the middle of the night. It is mixed with other programs and when I record it, I get other programs that I don't want. It would be much better if I were able to send for the videos. |
| I received–didn't check my email and didn't have time to figure out where or when to see the programs or work them into my schedule. I would rather have the information on hand and use it to supplement the unit when I teach it. |
| We can get the guides, either by mail or downloaded. 6th Grade science used one or more during the year for activities related to curriculum. |
| I downlink these programs for the Duval County School System. |

*Upon prompting respondents as to why they did **not** use the program, the answers below were received.*

| |
|---|
| I am part of a reform math program that required all of my class time. I incorporated some activities that supported the standards-based text I was implementing. |
| My students were unable to effectively complete the projects due to the advanced nature of the program. I plan to use the program with next years group. |
| no need |
| Much of the math was above level for my 5th graders, so I didn't print out the guide. I did look at several on the web, though and will probably print out several this summer for use next year. |
| I didn't have time to use everything. |
| I was acting as a contact person for my district due to the fact that I had email access to the over 500 science teachers. I personally did not use the program as I am not in the classroom this year. I have an interest to use them with one or several of the graduate and undergraduate courses that I teach, as well as, in the numerous Professional Development activities I am involved with. What I have seen I LOVE!!!!! I think it would be great with kids, but I have not used it with kids YET! |
| I couldn't get the programs so I didn't access the Teacher's Guides |
| I could not access the programs via satellite |
| It doesn't fit my curriculum |
| Not enough time |
| I learned about the program too late |
| I was unable to access the NASA CONNECT videos and was unaware that print guides existed. |
| The mixture in my students in my classroom prevented it. |
| I very much wanted to use the programs but could not gain access to them |
| I don't have the programs yet and I lack computers that will sustain the learning. |

*When asked to give any additional comments regarding the educator guides, respondents provided the comments below.*

| |
|---|
| The educator guides were not accessible. I gave up. |
| We use them to determine where they fit into the Florida Sunshine State Standards. |
| Answers for some problems in the TE would be great. Because of the time delay I have experienced in getting a tape of the show, I have proceeded with the module before viewing the video. If you thought about using a DVD, maybe it could include them as well. This would open up the program to more students. |
| These are a good idea but are very hard to manage. As a special education teacher, I would like to see them laid out differently maybe use a mixed group of teachers that do and do not teach science/math would be helpful. |
| They would be great on CD-Rom. |
| Lack of time. |
| I teach Gifted and Talented students. Our topics rotate every four years. Next year is space. |
| Evaluation is long and repetitive. |
| We don't have a DVD. |
| Must conform to 8.5 × 11 format. |
| The kids loved the activities. |
| I have difficulty getting the tapes; however, I do use the printed material and find it very well done. |
| Should be created for lower level of learning. |
| Received "Dancing in the Night Sky" too late to use this year. Didn't realize videos were available. |
| We have trouble downloading large files from the Internet (Internet cuts off too quickly to completely download). Hard copy works better for us |
| Having print guides provided is a great resource for me. It is not always easy to download guides from the Internet: sometimes there are problems in bringing up the guides and certain parts of them do not clearly reproduce. |
| Print version of the guides is advantageous as the teachers can make copies for students without any hassles. |
| I am missing parts and that limits my ability to use the program. |
| Our school does not have DVD players. |
| We do not currently have a DVD player. We use CD-Rom regularly during literacy. We have three reliable stations and a computer lab that could conceivably be turned into a whole class activity. Otherwise, I'm afraid that I would have to use it only during a workshop period. |
| I feel they are good approaches to standards-based mathematics. |
| Our district currently does not allow use of any CD-ROMs unless they are centrally loaded and available to all schools. I can use any that contain information only, but if they have to be launched by a program, they are unavailable to me. We hope that will change, but at the moment, those are the district policies. |
| Print is easier for me to use. |
| I have been a big fan of NASA from its inception and it was fun to have newer facts at hand to |
| discuss the more technical ideas with students. |
| Thank you for this service. |
| It's better if the guide is presented in color. |

*When asked to give any additional comments regarding the classroom activities, respondents provided the comments below.*

| |
|---|
| I teach Gifted and Talented students. Our topics rotate every four years. Next year is space. |
| Need a schedule of future broadcasts so that we may plan on viewing programs. |
| sometimes difficulty downloading |
| In past years your lessons have been age appropriate and have met Kentucky Educational Reform Act criteria, and were well received by students. Background information was strong and helpful for introducing the material and activities |
| The activities were usually appropriate and reasonable for my students, but I did not always have time to incorporate them into our course work. As much as science teachers want & need to use hands-on activities with students, we are constantly fighting the time element. |
| In general, I've found NASA-related activities easy to use and always fun for kids. |
| I had specific questions concerning my classroom computer access. I answered for the room that I was in the 2000–2001 school year, which was fairly indicative for the school I was in as a whole. (Sorry if this provides you with invalid data. |
| Most of my students are English as a second language learners so I could use a few more lessons written from a slightly lower reading level. |
| Time was the factor for my not using the activities. I will be incorporating them in the future. |
| More information was needed to prepare me for their use. I fumbled a lot. |

*When asked why users did not use the programs in question, respondents provided the comments below.*

| |
|---|
| Not available |
| no time |
| I didn't receive the programs. |
| see above |
| It is tough to use a computer in my classroom because of time and access for students. |
| Again, I had no access to the 2002–2003 materials. |
| not teaching staff |
| not enough time |
| Doesn't apply to the District ITV |
| My VA service-connected disability Rehabilitation program did not grant me the TV I requested, to my great disappointment, and I have no TV. Hope to find other means to get a TV. |
| Difficulty getting access to computers |
| As I am the Media Specialist for an Educational Television Channel, I feel the rest of the survey does not pertain to me. The shows are wonderful and our audience asks for them to be broadcast. |
| too few computers and availability of time on them |
| Delivery of tapes delayed due to mix up with media services, most of them coming in one batch - used only #2 as it fit exactly what we were doing at the time and didn't have time to plan for all the activities associated with it. |
| Time |

| |
|---|
| STARBASE |
| Hard to schedule time in computer lab |
| did not use online connect |
| Not enough time in a day. Too little computer access |
| I have not looked into these web-based activities yet. |
| Lack of time. |
| Not sure how to take advantage of NASA CONNECT. |
| You have different activities online? I did not know that. I will be sure to check them out! |

*When asked why users did not use the programs in question, respondents provided the comments below.*

| |
|---|
| I teach Gifted and Talented students. Our topics rotate every four years. Next year is space. |
| No time |
| inability to book lab time when needed |
| I do not have any NASA CONNECT software. |
| Time constraints |
| Same as before. |
| Same as number 44. |
| I plan to use some of the other activities in May as we're wrapping up the end of the year. |
| no time |
| I did not use the program |
| I only got to see the program briefly, but it looked interesting and hopefully I will get to use it next year. |
| Didn't use. |
| Did not use those topics |
| next year |
| I did not realize they were available online. |
| same as above |
| No time |
| If the guides don't arrive, I will be considering using the site to keep up to date... |
| sometimes hard to download and no time |
| lack of computer access |
| See question 55. |
| I teach English and Reading. |
| not enough access to computers |
| Same as #53 |
| Will use in the future. |
| I was involved with so many activities that I wasn't able to attend to this matter. |
| Lack of computer time for students |
| Right now I am full-time doctoral student. |
| Programs are only sent via ITFS. |

| |
|---|
| No computers for students |
| Brand new school–slowly getting things implemented. |
| Time in the school computer lab is limited and often not available when I would like to be able to use it with students. |
| see previous comment |
| Unable to obtain NASA CONNECT series |
| not enough access |
| Same as above |
| see 44 and 55 |
| did not teach this year |
| See above |
| I would like to receive some copies of the programs. It is possible to get Spanish versions in the future. |
| I am instructional technology coordinator. Some materials were used by classroom teachers but I have received no feedback. |
| We have no access to the Web. |
| Computer availability is very, very limited for an entire classroom activity. |
| Some things were too advanced for the spec.ed population I teach. |
| There is limited access to a bank of computers |
| Time constraints in the computer lab. |

*When asked why users did not use the programs in question, respondents provided the comments below.*

| |
|---|
| I just began the universe unit this year. I plan to incorporate the activities and lessons into the unit for next year. |
| I need information during the summer to plan my activites for the next year. (In May) |
| Same answer as #55 |
| I didn't have enough time to use everything. |
| I used only the activity that I received. |
| I cannot address, sorry. |
| Again, no access to the programs, but I didn't think of accessing the Web to see if I could have used the web pages instead. |
| ditto |
| I never had the time to look at the web site. |
| not enough time |
| Not had time yet to try them |
| We didn't have enough time to look up the web-based activities. |
| I learned about the program too late. |
| I was unable to access the videos. |
| Our computer cart was signed out for the allotted time period. No computers. |
| See # 44 |
| I don't have internet access in our home |
| I hope to use it next time now that I have more experience. |

*When asked to give any additional comments regarding the web-based activities, respondents provided the comments below.*

| |
|---|
| I use the NASA web site very often and plan lessons around it. I took my students to KSC this spring and we did much advanced planning using the web site. |
| Excellent. Works well for the students. Students like the challenge. |
| I thought you needed a dish to receive the program. It is difficult to make arrangements to get the program. |
| I teach Gifted and Talented students. Our topics rotate every four years. Next year is space. |
| I have not visited the NASA CONNECT web site. |
| evaluation too long |
| same as above |
| I want to use it more |
| Unable to access the computer labs at the needed date or the server was down. |
| As I said before, I plan to explore the use of the website for the coming year. |
| This is a wonderful program but it is hard to get the tapes. |
| I like the format of self-pacing because it is not judgmental and offers positive feedback no matter how long a student may need to work on a particular activity. |
| Provided easier down loads. |

*Below are the "other" professional duties reported by respondents.*

| |
|---|
| Enrichment Specialist |
| school TV channel director |
| ITV Resource Teacher |
| Freelance Aerospace Educator |
| special education teacher |
| editor |
| Tech Integrator |
| Director |
| Lead Teacher K-5 too |
| Special Ed. Gifted |
| Trainer |
| Science resource teacher |
| Resource to teachers |
| writer |
| Right now I am full-time doctoral student. |
| Technology Resource Teacher |
| Registered Nurse Teacher |
| ITFS Technical Director |
| Assistant Education Specialist, Mammoth Cave National Park |
| science department chairperson |

| |
|---|
| Extension Educator |
| Gifted teacher |
| School-Based Technology Facilitator |
| Broadcast and Satellite Services Specialist |
| Math Dept Chairperson |
| I teach a math and science class for 12–15 year olds featuring NASA information and speakers who work at NASA. I teach at an educational Co-op and at a library. |
| student |

*When asked to provide their ethnicity, respondents gave the following responses to the prompt* of "other."

| |
|---|
| Polish |
| WASP |
| Chicano |
| Middle East |

# Appendix D

# Longitudinal Data

## Instructional Programming and Technology in the Classroom

Instructional technology enables teachers to teach more effectively.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.51 | 4.55 | 4.44 | 4.58 | 4.18 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.76 | 0.71 | 0.77 | 0.64 | 1.10 | 4.45 |
| Minimum | 1.00 | 2.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 290.00 | 263.00 | 123.00 | 109.00 | 226.00 | |
| No opinion | 4.00 | 0.00 | 0.00 | 2.00 | 1.00 | |

Instructional technology enables teachers to accommodate different learning styles.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.51 | 4.51 | 4.58 | 4.47 | 4.17 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | 0.73 | 0.69 | 0.61 | 0.75 | 1.05 | 4.45 |
| Minimum | 1.00 | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 293.00 | 263.00 | 123.00 | 108.00 | 222.00 | |
| No opinion | 1.00 | 0.00 | 1.00 | 3.00 | 2.00 | |

Instructional technology enables teachers to be more creative.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.55 | 4.66 | 4.61 | 4.50 | 4.27 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.74 | 0.56 | 0.65 | 0.81 | 1.06 | 4.52 |
| Minimum | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 293.00 | 262.00 | 124.00 | 111.00 | 223.00 | |
| No opinion | 0.00 | 1.00 | 0.00 | 1.00 | 2.00 | |

Instructional technology increases student learning and comprehension.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.41 | 4.44 | 4.30 | 4.37 | 4.07 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | 0.75 | 0.70 | 0.81 | 0.76 | 1.08 | 4.32 |
| Minimum | 2.00 | 3.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 289.00 | 263.00 | 124.00 | 111.00 | 221.00 | |
| No opinion | 5.00 | 0.00 | 0.00 | 1.00 | 3.00 | |

Instructional technology increases student willingness to discuss content/exchange ideas.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.23 | 4.29 | 4.18 | 4.19 | 4.09 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 0.88 | 0.79 | 0.86 | 0.83 | 1.05 | 4.19 |
| Minimum | 1.00 | 2.00 | 1.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 292.00 | 256.00 | 123.00 | 110.00 | 217.00 | |
| No opinion | 2.00 | 6.00 | 1.00 | 1.00 | 4.00 | |

Instructional technology increases student motivation and enthusiasm for learning.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.51 | 4.50 | 4.45 | 4.48 | 4.27 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.73 | 0.66 | 0.70 | 0.75 | 1.04 | 4.44 |
| Minimum | 2.00 | 3.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 291.00 | 261.00 | 124.00 | 112.00 | 219.00 | |
| No opinion | 2.00 | 1.00 | 0.00 | 0.00 | 2.00 | |

Instructional technology is effective with virtually all types of students.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.07 | 4.02 | 3.98 | 3.99 | 3.82 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 1.05 | 1.01 | 1.09 | 0.97 | 1.12 | 3.98 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 287.00 | 262.00 | 124.00 | 108.00 | 221.00 | |
| No opinion | 7.00 | 1.00 | 0.00 | 4.00 | 4.00 | |

Increasingly, schools have greater access to instructional programs.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.25 | 4.01 | 4.10 | 3.91 | 3.95 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 0.85 | 0.98 | 1.01 | 1.00 | 1.03 | 4.04 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 290.00 | 261.00 | 124.00 | 110.00 | 220.00 | |
| No opinion | 3.00 | 3.00 | 1.00 | 4.00 | 6.00 | |

Most of these programs are of good quality.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.86 | 3.76 | 3.94 | 3.53 | 3.71 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 0.92 | 0.88 | 0.84 | 1.03 | 1.00 | 3.76 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 284.00 | 254.00 | 123.00 | 110.00 | 215.00 | |
| No opinion | 10.00 | 9.00 | 2.00 | 4.00 | 7.00 | |

Most of these programs are not appropriate (i.e., too advanced or too basic for my students).

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 2.65 | 2.89 | 2.57 | 2.64 | No data | |
| Median | 3.00 | 3.00 | 2.00 | 3.00 | | |
| Standard deviation | 1.10 | 1.15 | 1.07 | 1.08 | | 2.69 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | | |
| Count | 272.00 | 244.00 | 122.00 | 104.00 | | |
| No opinion | 21.00 | 19.00 | 3.00 | 10.00 | | |

Most of these programs are appropriate for my students. (Question changed in 2002–2003)

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Mean | No data | No data | No data | No data | 3.58 |
| Median | | | | | 4.00 |
| Standard deviation | | | | | 0.93 |
| Minimum | | | | | 1.00 |
| Maximum | | | | | 5.00 |
| Count | | | | | 216.00 |
| No opinion | | | | | 7.00 |

Most of these programs are not easily broken into “teachable” units.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 2.78 | 2.91 | 2.64 | 2.97 | 3.71 | |
| Median | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 | |
| Standard deviation | 1.24 | 1.23 | 1.10 | 1.28 | 1.02 | 3.00 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 275.00 | 245.00 | 120.00 | 99.00 | 216.00 | |
| No opinion | 19.00 | 20.00 | 4.00 | 14.00 | 8.00 | |

Administrators support and encourage teachers to use instructional technology in the classroom.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.13 | 3.93 | 4.07 | 3.82 | 3.72 | |
| Median | 5.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 1.07 | 1.18 | 1.09 | 1.14 | 1.20 | 3.93 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 279.00 | 254.00 | 121.00 | 102.00 | 218.00 | |
| No opinion | 15.00 | 8.00 | 4.00 | 11.00 | 6.00 | |

Classrooms are growing increasingly rich in instructional technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.60 | 3.68 | 3.48 | 3.54 | 3.58 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 1.09 | 1.13 | 1.06 | 1.09 | 1.11 | 3.58 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 289.00 | 262.00 | 125.00 | 107.00 | 220.00 | |
| No opinion | 5.00 | 3.00 | 0.00 | 7.00 | 4.00 | |

Teachers are generally positive about introducing/using instructional technology in the classroom.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.37 | 3.38 | 3.46 | 3.32 | 3.45 | |
| Median | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| Standard deviation | 1.02 | 1.10 | 0.98 | 1.00 | 0.95 | 3.40 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 288.00 | 263.00 | 124.00 | 108.00 | 220.00 | |
| No opinion | 6.00 | 2.00 | 0.00 | 6.00 | 4.00 | |

Which of the following factors are barriers to integrating technology into your instructional program? (Check all that apply.)

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| # Respondents | No data | 262.00 | 120.00 | 152.00 | 222.00 | Longitudinal averages |
| Not enough or limited access… | | 207.00 | 100.00 | 87.00 | 162.00 | |
| | | 79.01% | 83.33% | 57.24% | 72.90% | 73.12% |
| Not enough computer software… | | 152.00 | 73.00 | 62.00 | 112.00 | |
| | | 58.02% | 60.83% | 40.79% | 50.45% | 52.52% |
| Purchased software has not… | | 47.00 | 13.00 | 15.00 | 25.00 | |
| | | 17.94% | 10.83% | 9.87% | 11.26% | 12.48% |
| Lack of time in school… | | 167.00 | 79.00 | 65.00 | 145.00 | |
| | | 63.74% | 65.83% | 42.76% | 63.31% | 58.91% |
| Lack of technical support… | | 122.00 | 50.00 | 48.00 | 100.00 | |
| | | 46.56% | 41.67% | 31.58% | 45.14% | 41.24% |
| Lack of teacher training… | | 137.00 | 63.00 | 48.00 | 114.00 | |
| | | 52.29% | 52.50% | 31.58% | 51.35% | 46.93% |
| Lack of knowledge concerning… | | 130.00 | 56.00 | 43.00 | 93.00 | |
| | | 49.62% | 46.67% | 28.29% | 41.89% | 41.62% |

Do you use instructional programming in your classroom?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| Yes | | | | 69.00 | 163.00 |
| No | | | | 41.00 | 57.00 |
| n = | | | | 110.00 | 220.00 |

Compared to other instructional programming, the quality of NASA CONNECT™ is…

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| better than average | | | | 59.00 | 143.00 |
| about average | | | | 11.00 | 19.00 |
| worse than average | | | | 0.00 | 0.00 |
| I'm unable to judge | | | | 4.00 | 14.00 |

Compared to the curriculum/lesson guides in other instructional programming, the quality of the NASA CONNECT™ curriculum/lesson guide is…

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| better than average | | | | 51.00 | 138.00 |
| about average | | | | 18.00 | 22.00 |
| worse than average | | | | 0.00 | 1.00 |
| I'm unable to judge | | | | 5.00 | 14.00 |

Compared to the video in other instructional programming, the quality of the video in NASA CONNECT™ is…

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| better than average | | | | 52.00 | 116.00 |
| about average | | | | 12.00 | 26.00 |
| worse than average | | | | 0.00 | 1.00 |
| I'm unable to judge | | | | 10.00 | 32.00 |

Compared to the web-based activities in other instructional programming, the quality of the web-based activities in NASA CONNECT™ is…

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| better than average | | | | 51.00 | 122.00 |
| about average | | | | 10.00 | 25.00 |
| worse than average | | | | 0.00 | 0.00 |
| I'm unable to judge | | | | 12.00 | 29.00 |

## Television/Video Programs

Did you use the following programs?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Program 1 | | | | | |
| yes | | 108.00 | 57.00 | 21.00 | 61.00 |
| no | | 28.00 | 15.00 | 27.00 | 53.00 |
| no, but I may in future | | 109.00 | 43.00 | 50.00 | 98.00 |
| Program 2 | | | | | |
| yes | | 79.00 | 37.00 | 24.00 | 75.00 |
| no | | 33.00 | 25.00 | 21.00 | 44.00 |
| no, but I may in future | | 119.00 | 48.00 | 54.00 | 95.00 |
| Program 3 | | | | | |
| yes | | 66.00 | 45.00 | 25.00 | 67.00 |
| no | | 44.00 | 18.00 | 19.00 | 37.00 |
| no, but I may in future | | 133.00 | 51.00 | 54.00 | 108.00 |
| Program 4 | | | | | |
| yes | | 41.00 | 37.00 | 11.00 | 65.00 |
| no | | 46.00 | 25.00 | 26.00 | 40.00 |
| no, but I may in future | | 135.00 | 48.00 | 56.00 | 110.00 |
| Program 5 | | | | | |
| yes | | 65.00 | 20.00 | 9.00 | 52.00 |
| no | | 37.00 | 28.00 | 26.00 | 47.00 |
| no, but I may in future | | 136.00 | 60.00 | 55.00 | 107.00 |
| Program 6 | | | | | |
| yes | | 52.00 | | 17.00 | 31.00 |
| no | | 39.00 | | 24.00 | 69.00 |
| no, but I may in future | | 133.00 | | 56.00 | 104.00 |
| Program 7 | | | | | |
| yes | | 46.00 | | 18.00 | 65.00 |
| no | | 53.00 | | 19.00 | 34.00 |
| no, but I may in future | | 132.00 | | 59.00 | 107.00 |
| Program 8 | | | | | |
| yes | | | | 16.00 | 65.00 |
| no | | | | 22.00 | 33.00 |
| no, but I may in future | | | | 57.00 | 111.00 |
| Program 9 | | | | | |
| yes | | | | 22.00 | 40.00 |
| no | | | | 20.00 | 41.00 |
| no, but I may in future | | | | 54.00 | 131.00 |

If you selected “yes” (to having used the video programs), please indicate how these programs were used.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Program 1 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 59.00 | 28.00 | 15.00 | 26.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 66.00 | 30.00 | 16.00 | 36.00 |
| c. as a special interest topic | | 37.00 | 30.00 | 14.00 | 17.00 |
| d. other | | 15.00 | 2.00 | No data | No data |
| e. break from routine | | No data | No data | 11.00 | 14.00 |
| Program 2 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 32.00 | 14.00 | 6.00 | 21.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 51.00 | 21.00 | 12.00 | 30.00 |
| c. as a special interest topic | | 26.00 | 5.00 | 9.00 | 26.00 |
| d. other | | 9.00 | 3.00 | No data | No data |
| e. break from routine | | No data | No data | 4.00 | 13.00 |
| Program 3 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 23.00 | 18.00 | 9.00 | 20.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 40.00 | 27.00 | 13.00 | 33.00 |
| c. as a special interest topic | | 24.00 | 9.00 | 11.00 | 16.00 |
| d. other | | 8.00 | 2.00 | No data | No data |
| e. break from routine | | No data | No data | 8.00 | 11.00 |
| Program 4 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 17.00 | 9.00 | 3.00 | 18.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 29.00 | 23.00 | 9.00 | 29.00 |
| c. as a special interest topic | | 23.00 | 7.00 | 9.00 | 15.00 |
| d. other | | 9.00 | 2.00 | No data | No data |
| e. break from routine | | No data | No data | 5.00 | 15.00 |
| Program 5 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 28.00 | 12.00 | 1.00 | 19.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 37.00 | 9.00 | 7.00 | 29.00 |
| c. as a special interest topic | | 26.00 | 3.00 | 10.00 | 17.00 |
| d. other | | 7.00 | 2.00 | No data | No data |
| e. break from routine | | No data | No data | 6.00 | 13.00 |
| Program 6 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 18.00 | | | 9.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 33.00 | | | 12.00 |
| c. as a special interest topic | | 19.00 | | | 9.00 |
| d. other | | 7.00 | | | No data |
| e. break from routine | | | | | 5.00 |
| Program 7 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | 17.00 | | | 24.00 |
| b. to reinforce a curriculum topic, objective, or skill | | 24.00 | | | 27.00 |
| c. as a special interest topic | | 21.00 | | | 13.00 |
| d. other | | 8.00 | | | No data |
| e. break from routine | | | | | 11.00 |
| Program 8 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | | | | 12.00 |
| b. to reinforce a curriculum topic, objective, or skill | | | | | 26.00 |
| c. as a special interest topic | | | | | 18.00 |
| d. other | | | | | No data |
| e. break from routine | | | | | 7.00 |
| Program 9 | | | | | |
| a. to introduce a curriculum topic, objective, or skill | | | | | 11.00 |
| b. to reinforce a curriculum topic, objective, or skill | | | | | 11.00 |
| c. as a special interest topic | | | | | 23.00 |
| d. other | | | | | No data |
| e. break from routine | | | | | 5.00 |

If you selected “yes” for having used the video programs, please indicate how these programs were viewed…

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Program 1 | | | | | |
| a. live | | 8.00 | 4.00 | 2.00 | 5.00 |
| b. taped | | 87.00 | 42.00 | 27.00 | 48.00 |
| c. both | | 2.00 | 2.00 | 5.00 | 8.00 |
| d. not viewed | | 15.00 | 9.00 | 6.00 | 14.00 |
| Program 2 | | | | | |
| a. live | | 7.00 | 1.00 | 1.00 | 2.00 |
| b. taped | | 69.00 | 27.00 | 18.00 | 46.00 |
| c. both | | 2.00 | 1.00 | 2.00 | 5.00 |
| d. not viewed | | 14.00 | 5.00 | 8.00 | 12.00 |
| Program 3 | | | | | |
| a. live | | 6.00 | 1.00 | 1.00 | 2.00 |
| b. taped | | 52.00 | 34.00 | 16.00 | 41.00 |
| c. both | | 2.00 | 2.00 | 3.00 | 4.00 |
| d. not viewed | | 15.00 | 9.00 | 6.00 | 13.00 |
| Program 4 | | | | | |
| a. live | | 9.00 | 2.00 | 0.00 | 3.00 |
| b. taped | | 43.00 | 24.00 | 12.00 | 42.00 |
| c. both | | 3.00 | 1.00 | 1.00 | 3.00 |
| d. not viewed | | 16.00 | 10.00 | 6.00 | 11.00 |
| Program 5 | | | | | |
| a. live | | 4.00 | 0.00 | 1.00 | 1.00 |
| b. taped | | 56.00 | 19.00 | 13.00 | 40.00 |
| c. both | | 2.00 | 0.00 | 1.00 | 4.00 |
| d. not viewed | | 16.00 | 10.00 | 6.00 | 8.00 |
| Program 6 | | | No further programs | | |
| a. live | | 5.00 | | | 3.00 |
| b. taped | | 44.00 | | | 20.00 |
| c. both | | 2.00 | | | 5.00 |
| d. not viewed | | 19.00 | | | 12.00 |
| Program 7 | | | | | |
| a. live | | 3.00 | | | 3.00 |
| b. taped | | 40.00 | | | 39.00 |
| c. both | | 3.00 | | | 5.00 |
| d. not viewed | | 22.00 | | | 13.00 |
| Program 8 | | | | | |
| a. live | | | | | 1.00 |
| b. taped | | | | | 41.00 |
| c. both | | | | | 3.00 |
| d. not viewed | | | | | 10.00 |
| Program 9 | | | | | |
| a. live | | | | | 2.00 |
| b. taped | | | | | 25.00 |
| c. both | | | | | 5.00 |
| d. not viewed | | | | | 14.00 |

How did you receive the program?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| PBS | No data | 46.00 | 13.00 | 15.00 | 45.00 |
| Downlinked it | | 18.00 | 2.00 | 8.00 | 27.00 |
| Media Specialist taped it | | 56.00 | 22.00 | 17.00 | 57.00 |
| I, or someone else taped it | | 42.00 | 29.00 | 23.00 | 50.00 |
| NASA sent me the tapes | | 45.00 | 19.00 | 17.00 | 24.00 |

Did you experience difficulty obtaining any of the programs in the 2001–2002 NASA CONNECT™ series?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| % who had difficulty | | 50.93% | 41.11% | 50.53% | 48.50% | |
| Yes | | 110.00 | 37.00 | 48.00 | 97.00 | |
| No | | 106.00 | 53.00 | 47.00 | 103.00 | 47.77% |
| n = | | 216.00 | 90.00 | 95.00 | 200.00 | |

If you selected "yes" for having viewed the video programs, please indicate the grade level(s) that viewed the programs.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Grades | | | | | |
| K | | | | | 6 |
| 1st | | | | | 3 |
| 2nd | | | | | 5 |
| 3rd | 19.00 | 4.00 | 1.00 | 7.00 | 7 |
| 4th | 75.00 | 9.00 | 8.00 | 10.00 | 10 |
| 5th | 97.00 | 17.00 | 17.00 | 20.00 | 20 |
| 6th | 92.00 | 40.00 | 17.00 | 19.00 | 42 |
| 7th | 70.00 | 26.00 | 14.00 | 18.00 | 50 |
| 8th | 78.00 | 39.00 | 12.00 | 15.00 | 56 |
| 9th | 14.00 | 22.00 | 3.00 | 10.00 | 17 |
| 10th | 7.00 | 15.00 | 2.00 | 8.00 | 16 |
| 11th | 5.00 | 13.00 | 3.00 | 8.00 | 17 |
| 12th | 5.00 | 12.00 | 4.00 | 6.00 | 15 |
| 13th | | | | | 1 |
| 14th | | | | | 2 |
| 15th | | | | | 1 |
| 16th | | | | | 2 |

The programs were of good artistic quality.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.36 | 4.39 | 4.45 | 4.12 |
| Median | | 4.00 | 5.00 | 5.00 | 4.00 |
| Standard deviation | | 0.70 | 0.69 | 0.68 | 0.97 |
| Minimum | | 1.00 | 3.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 168.00 | 71.00 | 69.00 | 148.00 |
| No opinion | | 43.00 | 14.00 | 25.00 | 54.00 |

| Longitudinal mean |
|---|
| 4.33 |

The programs were of good technical quality.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.49 | 4.56 | 4.51 | 4.27 |
| Median | | 5.00 | 5.00 | 5.00 | 4.00 |
| Standard deviation | | 0.64 | 0.60 | 0.75 | 0.94 |
| Minimum | | 1.00 | 3.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 172.00 | 71.00 | 71.00 | 150.00 |
| No opinion | | 42.00 | 15.00 | 25.00 | 51.00 |

| Longitudinal mean |
|---|
| 4.46 |

The programs enabled me to accommodate different learning styles.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.17 | 4.21 | 4.31 | 4.03 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.78 | 0.83 | 0.72 | 0.95 |
| Minimum | | 2.00 | 1.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 168.00 | 70.00 | 67.00 | 143.00 |
| No opinion | | 46.00 | 15.00 | 29.00 | 59.00 |

| Longitudinal mean |
|---|
| 4.18 |

The programs increased student willingness to discuss/exchange ideas.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.18 | 4.25 | 4.24 | 4.05 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.80 | 0.74 | 0.77 | 0.95 |
| Minimum | | 2.00 | 2.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 162.00 | 69.00 | 66.00 | 138.00 |
| No opinion | | 52.00 | 16.00 | 30.00 | 59.00 |

| Longitudinal mean |
|---|
| 4.18 |

The programs increased student enthusiasm for learning.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.25 | 4.29 | 4.38 | 4.21 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.76 | 0.80 | 0.69 | 0.94 |
| Minimum | | 2.00 | 2.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 161.00 | 70.00 | 69.00 | 137.00 |
| No opinion | | 53.00 | 15.00 | 26.00 | 59.00 |

| Longitudinal mean |
|---|
| 4.28 |

The programs were effective with virtually all types of students.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 3.99 | 3.84 | 4.15 | 3.87 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.96 | 1.06 | 0.76 | 1.02 |
| Minimum | | 2.00 | 1.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 159.00 | 70.00 | 67.00 | 138.00 |
| No opinion | | 54.00 | 15.00 | 29.00 | 60.00 |

| Longitudinal mean |
|---|
| 3.96 |

The programs were a valuable instructional aid.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.44 | 4.47 | 4.58 | 4.25 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | | 0.72 | 0.68 | 0.65 | 0.98 |
| Minimum | | 2.00 | 3.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 168.00 | 70.00 | 69.00 | 143.00 |
| No opinion | | 47.00 | 16.00 | 27.00 | 53.00 |

| Longitudinal mean |
|---|
| 4.44 |

The programs were developmentally appropriate for the grade level.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.06 | 3.88 | 4.36 | 4.03 |
| Median | | 4.00 | 4.00 | 5.00 | 4.00 |
| Standard deviation | | 0.91 | 0.81 | 0.87 | 0.94 |
| Minimum | | 1.00 | 2.00 | 1.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 164.00 | 66.00 | 69.00 | 146.00 |
| No opinion | | 43.00 | 16.00 | 27.00 | 53.00 |

| Longitudinal mean |
|---|
| 4.08 |

The programs were easily incorporated into the curriculum.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.08 | 4.03 | 3.99 | 4.08 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.93 | 0.86 | 1.04 | 0.99 |
| Minimum | | 2.00 | 2.00 | 1.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 160.00 | 69.00 | 69.00 | 147.00 |
| No opinion | | 46.00 | 14.00 | 27.00 | 55.00 |

| Longitudinal mean |
|---|
| 4.04 |

The programs enhanced the integration of mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.55 | 4.57 | 4.56 | 4.31 | |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | | 0.67 | 0.61 | 0.68 | 1.04 | 4.50 |
| Minimum | | 2.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 166.00 | 69.00 | 68.00 | 147.00 | |
| No opinion | | 41.00 | 16.00 | 28.00 | 54.00 | |

The programs raised student awareness of careers that require mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.52 | 4.56 | 4.54 | 4.20 | |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | | 0.69 | 0.63 | 0.64 | 1.06 | 4.46 |
| Minimum | | 2.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 164.00 | 68.00 | 67.00 | 146.00 | |
| No opinion | | 43.00 | 16.00 | 29.00 | 55.00 | |

The programs demonstrated the application of mathematics, science, and technology on the job.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.62 | 4.61 | 4.63 | 4.27 | |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | | 0.61 | 0.63 | 0.62 | 1.04 | 4.53 |
| Minimum | | 3.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 165.00 | 66.00 | 67.00 | 147.00 | |
| No opinion | | 42.00 | 15.00 | 28.00 | 52.00 | |

The programs presented mathematics, science, and technology as disciplines requiring creativity, critical thinking, and problem-solving skills.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.56 | 4.68 | 4.64 | 4.34 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | | 0.57 | 0.53 | 0.57 | 1.05 |
| Minimum | | 3.00 | 3.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 165.00 | 68.00 | 67.00 | 147.00 |
| No opinion | | 42.00 | 15.00 | 28.00 | 50.00 |

| Longitudinal mean |
|---|
| 4.55 |

The programs illustrated the integration of workplace mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.59 | 4.58 | 4.64 | 4.31 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | | 0.59 | 0.60 | 0.65 | 1.01 |
| Minimum | | 3.00 | 3.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 167.00 | 69.00 | 66.00 | 148.00 |
| No opinion | | 42.00 | 14.00 | 29.00 | 50.00 |

| Longitudinal mean |
|---|
| 4.53 |

The programs presented women and minorities performing challenging engineering and scientific tasks.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.51 | 4.47 | 4.55 | 4.22 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | | 0.61 | 0.66 | 0.58 | 1.03 |
| Minimum | | 2.00 | 3.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 162.00 | 68.00 | 67.00 | 140.00 |
| No opinion | | 45.00 | 15.00 | 29.00 | 56.00 |

| Longitudinal mean |
|---|
| 4.44 |

The programs were a positive link between the classroom activity and the web-based activity.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.38 | 4.34 | 4.46 | 4.21 |
| Median | | 5.00 | 4.00 | 5.00 | 5.00 |
| Standard deviation | | 0.74 | 0.74 | 0.67 | 0.97 |
| Minimum | | 2.00 | 2.00 | 2.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 136.00 | 64.00 | 61.00 | 134.00 |
| No opinion | | 71.00 | 19.00 | 34.00 | 63.00 |

| Longitudinal mean |
|---|
| 4.35 |

## Lesson Guides

Did you use the lesson guides for the following programs?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Program 1 | No data | | | | |
| yes | | 109.00 | 65.00 | 21.00 | 59.00 |
| no | | 23.00 | 7.00 | 17.00 | 44.00 |
| no, but I may in future | | 87.00 | 34.00 | 49.00 | 87.00 |
| Program 2 | | | | | |
| yes | | 89.00 | 44.00 | 22.00 | 70.00 |
| no | | 22.00 | 13.00 | 19.00 | 40.00 |
| no, but I may in future | | 94.00 | 42.00 | 49.00 | 58.00 |
| Program 3 | | | | | |
| yes | | 67.00 | 50.00 | 24.00 | 60.00 |
| no | | 35.00 | 14.00 | 17.00 | 26.00 |
| no, but I may in future | | 104.00 | 39.00 | 49.00 | 107.00 |
| Program 4 | | | | | |
| yes | | 50.00 | 42.00 | 13.00 | 60.00 |
| no | | 32.00 | 14.00 | 21.00 | 32.00 |
| no, but I may in future | | 113.00 | 41.00 | 51.00 | 102.00 |
| Program 5 | | | | | |
| yes | | 66.00 | 29.00 | 9.00 | 45.00 |
| no | | 33.00 | 17.00 | 23.00 | 40.00 |
| no, but I may in future | | 105.00 | 48.00 | 48.00 | 102.00 |
| Program 6 | | | | | |
| yes | | 55.00 | | 17.00 | 29.00 |
| no | | 32.00 | | 19.00 | 46.00 |
| no, but I may in future | | 109.00 | | 53.00 | 105.00 |
| Program 7 | | | | | |
| yes | | 44.00 | | 15.00 | 55.00 |
| no | | 43.00 | | 17.00 | 33.00 |
| no, but I may in future | | 109.00 | | 55.00 | 105.00 |
| Program 8 | | | | | |
| yes | | | | 13.00 | 60.00 |
| no | | | | 21.00 | 28.00 |
| no, but I may in future | | | | 54.00 | 106.00 |
| Program 9 | | | | | |
| yes | | | | 19.00 | 42.00 |
| no | | | | 18.00 | 32.00 |
| no, but I may in future | | | | 52.00 | 110.00 |

The directions/instructions in the lesson guides were easily understood.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.16 | 4.44 | 4.28 | 4.23 | 4.09 | |
| Median | 4.00 | 5.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 0.86 | 0.76 | 0.75 | 0.81 | 1.07 | 4.24 |
| Minimum | 1.00 | 1.00 | 2.00 | 3.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 208.00 | 171.00 | 85.00 | 48.00 | 142.00 | |
| No opinion | 1.00 | 18.00 | 6.00 | 19.00 | 19.00 | |

The layout of the lesson guides presented the information clearly.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.28 | 4.42 | 4.31 | 4.43 | 4.13 | |
| Median | 4.00 | 5.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | 0.78 | 0.75 | 0.75 | 0.74 | 1.05 | 4.31 |
| Minimum | 1.00 | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 208.00 | 172.00 | 85.00 | 56.00 | 148.00 | |
| No opinion | 1.00 | 19.00 | 6.00 | 10.00 | 13.00 | |

The lesson guides were a valuable instructional aid.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.40 | 4.52 | 4.36 | 4.44 | 4.26 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.72 | 0.71 | 0.75 | 0.71 | 1.03 | 4.40 |
| Minimum | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 206.00 | 170.00 | 84.00 | 55.00 | 145.00 | |
| No opinion | 3.00 | 21.00 | 6.00 | 11.00 | 16.00 | |

The print and electronic resources in the lesson guide were a valuable instructional aid.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.47 | 4.27 | 4.40 | 4.14 | |
| Median | | 5.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.70 | 0.77 | 0.95 | 1.03 | 4.32 |
| Minimum | | 2.00 | 3.00 | 1.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 159.00 | 81.00 | 50.00 | 139.00 | |
| No opinion | | 30.00 | 8.00 | 27.00 | 18.00 | |

The cue cards provided a positive link between the video and the lesson guide.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.23 | 4.16 | 4.23 | 4.09 | |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | | 0.90 | 0.83 | 0.81 | 1.05 | 4.18 |
| Minimum | | 1.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 124.00 | 56.00 | 48.00 | 119.00 | |
| No opinion | | 61.00 | 27.00 | 19.00 | 42.00 | |

The teacher “background” portion of the lesson guide was a valuable instructional aid.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.54 | 4.48 | 4.48 | 4.22 | |
| Median | | 5.00 | 5.00 | 5.00 | 4.50 | |
| Standard deviation | | 0.70 | 0.75 | 0.72 | 1.00 | 4.43 |
| Minimum | | 1.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 158.00 | 80.00 | 54.00 | 138.00 | |
| No opinion | | 30.00 | 9.00 | 13.00 | 20.00 | |

The lesson guide was easy to download from the Internet.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.13 | 4.00 | 4.08 | 4.05 |
| Median | | 5.00 | 4.00 | 5.00 | 4.00 |
| Standard deviation | | 1.23 | 1.13 | 1.23 | 1.18 |
| Minimum | | 1.00 | 1.00 | 1.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 89.00 | 34.00 | 40.00 | 116.00 |
| No opinion | | 95.00 | 55.00 | 27.00 | 44.00 |

| Longitudinal mean |
|---|
| 4.06 |

If the lesson guides were only available in electronic format, could you and would you use them?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Could you use them: | | | | | |
| on CD-ROM | | | | 53.00 | 136.00 |
| on DVD | | | | 13.00 | 47.00 |
| Would you use them: | | | | | |
| on CD-ROM | | | | 53.00 | 131.00 |
| on DVD | | | | 13.00 | 49.00 |

## Classroom Activities

Did you use the classroom activity for the following programs?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Program 1 | No data | | | | |
| yes | | 94.00 | 60.00 | 20.00 | 54.00 |
| no | | 27.00 | 10.00 | 14.00 | 46.00 |
| no, but I may in future | | 103.00 | 38.00 | 55.00 | 84.00 |
| Program 2 | | | | | |
| yes | | 74.00 | 37.00 | 21.00 | 65.00 |
| no | | 27.00 | 17.00 | 13.00 | 40.00 |
| no, but I may in future | | 105.00 | 47.00 | 54.00 | 85.00 |
| Program 3 | | | | | |
| yes | | 49.00 | 43.00 | 22.00 | 50.00 |
| no | | 32.00 | 15.00 | 13.00 | 34.00 |
| no, but I may in future | | 126.00 | 44.00 | 54.00 | 104.00 |
| Program 4 | | | | | |
| yes | | 36.00 | 38.00 | 8.00 | 56.00 |
| no | | 30.00 | 17.00 | 18.00 | 34.00 |
| no, but I may in future | | 123.00 | 41.00 | 58.00 | 93.00 |
| Program 5 | | | | | |
| yes | | 53.00 | 28.00 | 6.00 | 39.00 |
| no | | 31.00 | 19.00 | 19.00 | 44.00 |
| no, but I may in future | | 121.00 | 45.00 | 56.00 | 96.00 |
| Program 6 | | | | | |
| yes | | 43.00 | | 11.00 | 19.00 |
| no | | 26.00 | | 17.00 | 52.00 |
| no, but I may in future | | 122.00 | | 59.00 | 104.00 |
| Program 7 | | | | | |
| yes | | 34.00 | | 15.00 | 54.00 |
| no | | 33.00 | | 13.00 | 32.00 |
| no, but I may in future | | 127.00 | | 57.00 | 96.00 |
| Program 8 | | | | | |
| yes | | | | 14.00 | 48.00 |
| no | | | | 15.00 | 36.00 |
| no, but I may in future | | | | 58.00 | 96.00 |
| Program 9 | | | | | |
| yes | | | | 18.00 | 34.00 |
| no | | | | 13.00 | 39.00 |
| no, but I may in future | | | | 57.00 | 105.00 |

The classroom activity (experiment) was easily incorporated into my lesson plan.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.97 | 4.22 | 3.92 | 4.18 | 3.96 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 0.90 | 0.89 | 0.93 | 0.83 | 1.12 | 4.05 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 182.00 | 134.00 | 72.00 | 49.00 | 124.00 | |
| No opinion | 4.00 | 33.00 | 12.00 | 12.00 | 31.00 | |

The classroom activity (experiment) complemented the lesson for each show.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.39 | 4.46 | 4.20 | 4.39 | 4.15 | |
| Median | 5.00 | 5.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | 0.71 | 0.70 | 0.80 | 0.74 | 1.06 | 4.32 |
| Minimum | 2.00 | 1.00 | 2.00 | 3.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 171.00 | 124.00 | 64.00 | 46.00 | 120.00 | |
| No opinion | 12.00 | 41.00 | 19.00 | 15.00 | 36.00 | |

The classroom activity (experiment) was developmentally appropriate for the grade level.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | Longitudinal mean |
| Mean | 4.22 | 4.17 | 3.76 | 4.29 | 4.03 |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | 0.83 | 0.87 | 1.08 | 0.74 | 1.03 |
| Minimum | 1.00 | 1.00 | 1.00 | 3.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 180.00 | 131.00 | 72.00 | 49.00 | 127.00 |
| No opinion | 5.00 | 33.00 | 11.00 | 13.00 | 25.00 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 4.09 |

The classroom activities (experiments) were easy for me to use.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | Longitudinal mean |
| Mean | | 4.49 | 3.86 | 4.34 | 4.04 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 3.10 | 1.07 | 0.64 | 1.12 |
| Minimum | | 1.00 | 1.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 129.00 | 73.00 | 47.00 | 121.00 |
| No opinion | | 38.00 | 10.00 | 15.00 | 32.00 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 4.18 |

## Web-Based Activities

Did you use the web-based activity for the following programs?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Program 1 | No data | | | | |
| yes | | 19.00 | 6.00 | 6.00 | 34.00 |
| no | | 62.00 | 40.00 | 31.00 | 56.00 |
| no, but I may in future | | 129.00 | 54.00 | 46.00 | 89.00 |
| Program 2 | | | | | |
| yes | | 18.00 | 4.00 | 6.00 | 46.00 |
| no | | 56.00 | 40.00 | 31.00 | 48.00 |
| no, but I may in future | | 132.00 | 55.00 | 44.00 | 90.00 |
| Program 3 | | | | | |
| yes | | 27.00 | 3.00 | 8.00 | 34.00 |
| no | | 55.00 | 40.00 | 29.00 | 43.00 |
| no, but I may in future | | 136.00 | 56.00 | 46.00 | 105.00 |
| Program 4 | | | | | |
| yes | | 4.00 | 15.00 | 4.00 | 32.00 |
| no | | 63.00 | 33.00 | 32.00 | 49.00 |
| no, but I may in future | | 132.00 | 51.00 | 46.00 | 97.00 |
| Program 5 | | | | | |
| yes | | 14.00 | 5.00 | 5.00 | 29.00 |
| no | | 60.00 | 39.00 | 32.00 | 51.00 |
| no, but I may in future | | 128.00 | 54.00 | 44.00 | 95.00 |
| Program 6 | | | | | |
| yes | | 28.00 | | 2.00 | 11.00 |
| no | | 50.00 | | 31.00 | 58.00 |
| no, but I may in future | | 135.00 | | 48.00 | 106.00 |
| Program 7 | | | | | |
| yes | | 21.00 | | 1.00 | 31.00 |
| no | | 58.00 | | 31.00 | 45.00 |
| no, but I may in future | | 134.00 | | 47.00 | 104.00 |
| Program 8 | | | | | |
| yes | | | | 13.00 | 30.00 |
| no | | | | 28.00 | 47.00 |
| no, but I may in future | | | | 44.00 | 99.00 |
| Program 9 | | | | | |
| yes | | | | 9.00 | 22.00 |
| no | | | | 28.00 | 45.00 |
| no, but I may in future | | | | 46.00 | 105.00 |

The content of the web-based activities was easily integrated into the curriculum.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.98 | 4.09 | 3.83 | 4.30 | 4.10 | |
| Median | 4.00 | 4.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | 0.94 | 1.00 | 0.79 | 1.03 | 1.01 | 4.06 |
| Minimum | 1.00 | 1.00 | 2.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 59.00 | 64.00 | 18.00 | 27.00 | 80.00 | |
| No opinion | 5.00 | 55.00 | 21.00 | 18.00 | 44.00 | |

The content of the web-based activities enhanced the integration of mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.37 | 3.94 | 4.44 | 4.27 | |
| Median | | 5.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.79 | 1.00 | 0.82 | 0.92 | 4.26 |
| Minimum | | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 62.00 | 18.00 | 25.00 | 79.00 | |
| No opinion | | 58.00 | 21.00 | 20.00 | 43.00 | |

The web-based activities raised student awareness of careers that require mathematical, scientific, and technological knowledge.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.33 | 4.34 | 4.17 | 4.40 | 4.24 | |
| Median | 4.00 | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | 0.79 | 0.81 | 1.04 | 0.96 | 0.94 | 4.30 |
| Minimum | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 57.00 | 58.00 | 18.00 | 25.00 | 78.00 | |
| No opinion | 7.00 | 56.00 | 21.00 | 20.00 | 44.00 | |

If you selected “yes” for having used the web-based activities, please indicate the grade level(s) that used them.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Grades | No data | | | | |
| K | | | | | 1.00 |
| 1st | | | | | 0.00 |
| 2nd | | | | | 1.00 |
| 3rd | | 2.00 | 1.00 | 2.00 | 0.00 |
| 4th | | 6.00 | 3.00 | 2.00 | 3.00 |
| 5th | | 4.00 | 6.00 | 10.00 | 7.00 |
| 6th | | 14.00 | 5.00 | 5.00 | 22.00 |
| 7th | | 14.00 | 5.00 | 5.00 | 35.00 |
| 8th | | 19.00 | 5.00 | 8.00 | 35.00 |
| 9th | | 9.00 | 0.00 | 2.00 | 8.00 |
| 10th | | 7.00 | 0.00 | 2.00 | 7.00 |
| 11th | | 6.00 | 0.00 | 2.00 | 8.00 |
| 12th | | 4.00 | 0.00 | 2.00 | 9.00 |
| 13th | | | | | 0.00 |
| 14th | | | | | 0.00 |
| 15th | | | | | 0.00 |
| 16th | | | | | 0.00 |

Students were able to complete the web-based activities in a reasonable amount of time.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 3.86 | 3.94 | 4.30 | 3.82 |
| Median | | 4.00 | 4.00 | 5.00 | 4.00 |
| Standard deviation | | 1.18 | 0.83 | 0.82 | 1.09 |
| Minimum | | 1.00 | 2.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 51.00 | 17.00 | 27.00 | 73.00 |
| No opinion | | 57.00 | 18.00 | 15.00 | 52.00 |

| Longitudinal mean |
|---|
| 3.98 |

The web-based activities accommodated various learning styles.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.14 | 4.00 | 4.30 | 4.00 |
| Median | | 4.00 | 4.00 | 4.00 | 4.00 |
| Standard deviation | | 0.93 | 0.91 | 0.78 | 1.02 |
| Minimum | | 2.00 | 2.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 57.00 | 18.00 | 27.00 | 75.00 |
| No opinion | | 54.00 | 17.00 | 15.00 | 46.00 |

| Longitudinal mean |
|---|
| 4.11 |

The content for the web-based activities was appropriate for my students.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 3.92 | 4.04 | 3.88 | 4.36 | 3.98 |
| Median | 4.00 | 4.00 | 4.00 | 5.00 | 4.00 |
| Standard deviation | 0.89 | 0.94 | 0.86 | 0.87 | 1.04 |
| Minimum | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 60.00 | 57.00 | 17.00 | 28.00 | 75.00 |
| No opinion | 4.00 | 54.00 | 17.00 | 14.00 | 46.00 |

| Longitudinal mean |
|---|
| 4.03 |

The graphics for the web-based activities were appropriate for my students.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.16 | 4.17 | 4.32 | 4.10 |
| Median | | 4.00 | 4.00 | 5.00 | 4.00 |
| Standard deviation | | 0.88 | 0.79 | 0.86 | 1.11 |
| Minimum | | 2.00 | 2.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 55.00 | 18.00 | 28.00 | 77.00 |
| No opinion | | 56.00 | 17.00 | 14.00 | 47.00 |

| Longitudinal mean |
|---|
| 4.19 |

The web-based activities enhanced the integration of mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.64 | 4.17 | 4.54 | 4.20 | |
| Median | | 5.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.69 | 0.79 | 0.64 | 0.99 | 4.39 |
| Minimum | | 3.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 56.00 | 18.00 | 28.00 | 78.00 | |
| No opinion | | 55.00 | 17.00 | 14.00 | 41.00 | |

The web-based activities had a good balance of text and graphics.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.32 | 4.41 | 4.48 | 4.21 | |
| Median | | 5.00 | 5.00 | 5.00 | 1.00 | |
| Standard deviation | | 0.79 | 0.71 | 0.78 | 1.00 | 4.36 |
| Minimum | | 2.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 56.00 | 17.00 | 29.00 | 78.00 | |
| No opinion | | 55.00 | 18.00 | 13.00 | 43.00 | |

The web-based activities allowed my students to work at their own pace.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | |
|---|---|---|---|---|---|---|
| | No data | | | | | Longitudinal mean |
| Mean | | 4.13 | 4.11 | 4.33 | 4.19 | |
| Median | | 4.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.86 | 0.96 | 0.78 | 1.04 | 4.19 |
| Minimum | | 2.00 | 2.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 52.00 | 18.00 | 27.00 | 77.00 | |
| No opinion | | 58.00 | 17.00 | 15.00 | 46.00 | |

The web-based activities will likely be revisited/reused.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 4.36 | 4.47 | 4.50 | 4.21 |
| Median | | 5.00 | 5.00 | 5.00 | 4.50 |
| Standard deviation | | 0.95 | 0.72 | 0.69 | 1.05 |
| Minimum | | 1.00 | 3.00 | 3.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 58.00 | 17.00 | 28.00 | 78.00 |
| No opinion | | 53.00 | 18.00 | 13.00 | 41.00 |

| Longitudinal mean |
|---|
| 4.39 |

More online activities should be available on the NASA CONNECT™ web site.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 4.72 | 4.64 | 4.42 | 4.56 | 4.25 |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | 0.52 | 0.76 | 0.72 | 0.67 | 1.11 |
| Minimum | 3.00 | 1.00 | 3.00 | 3.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 61.00 | 81.00 | 31.00 | 32.00 | 76.00 |
| No opinion | 3.00 | 32.00 | 8.00 | 13.00 | 43.00 |

| Longitudinal mean |
|---|
| 4.52 |

Did you or your students use Norbert's Lab? (Dan's Domain starting in 2002–2003)

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No Data | | | | |
| Yes | | 25.00 | 5.00 | 10.00 | 13.00 |
| No | | 86.00 | 32.00 | 31.00 | 83.00 |
| n = | | 111.00 | 37.00 | 41.00 | 96.00 |

## NASA CONNECT™ Web Site

The NASA CONNECT™ web site is visually appealing.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.50 | 4.58 | 4.55 | 4.56 | 4.26 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.62 | 0.62 | 0.58 | 0.67 | 1.01 | 4.49 |
| Minimum | 3.00 | 2.00 | 3.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 135.00 | 166.00 | 71.00 | 81.00 | 155.00 | |
| No opinion | 4.00 | 32.00 | 19.00 | 15.00 | 34.00 | |

There is a good balance between text and graphics on the web site.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.38 | 4.49 | 4.41 | 4.37 | 4.24 | |
| Median | 4.00 | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | 0.68 | 0.65 | 0.71 | 0.78 | 0.99 | 4.38 |
| Minimum | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 127.00 | 164.00 | 69.00 | 81.00 | 154.00 | |
| No opinion | 12.00 | 37.00 | 19.00 | 14.00 | 35.00 | |

The web site is easily navigated.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.34 | 4.43 | 4.38 | 4.32 | 4.13 | |
| Median | 4.00 | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | 0.77 | 0.77 | 0.79 | 0.83 | 1.01 | 4.32 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 134.00 | 163.00 | 69.00 | 81.00 | 154.00 | |
| No opinion | 5.00 | 37.00 | 20.00 | 12.00 | 31.00 | |

When viewed on my monitor, the web site is clearly legible.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.51 | 4.58 | 4.48 | 4.49 | 4.31 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.61 | 0.66 | 0.72 | 0.74 | 0.94 | 4.47 |
| Minimum | 3.00 | 1.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 134.00 | 164.00 | 69.00 | 84.00 | 156.00 | |
| No opinion | 5.00 | 37.00 | 20.00 | 12.00 | 34.00 | |

The web site is designed so that printouts of individual pages are legible.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.45 | 4.50 | 4.52 | 4.38 | 4.28 | |
| Median | 5.00 | 5.00 | 5.00 | 4.00 | 4.50 | |
| Standard deviation | 0.69 | 0.82 | 0.59 | 0.74 | 0.95 | 4.42 |
| Minimum | 2.00 | 1.00 | 3.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 116.00 | 151.00 | 64.00 | 71.00 | 146.00 | |
| No opinion | 23.00 | 50.00 | 25.00 | 23.00 | 40.00 | |

Pages within the web site download quickly.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 3.87 | 4.09 | 4.12 | 3.99 | 3.95 | |
| Median | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | |
| Standard deviation | 1.04 | 0.95 | 0.95 | 1.10 | 1.09 | 4.00 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 121.00 | 148.00 | 61.00 | 75.00 | 147.00 | |
| No opinion | 17.00 | 53.00 | 28.00 | 21.00 | 41.00 | |

The page lengths are appropriate.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.42 | 4.33 | 4.38 | 4.13 | |
| Median | | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.68 | 0.81 | 0.77 | 0.98 | 4.32 |
| Minimum | | 3.00 | 1.00 | 2.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 153.00 | 66.00 | 74.00 | 147.00 | |
| No opinion | | 48.00 | 23.00 | 21.00 | 38.00 | |

The links to other sites/pages are current.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.41 | 4.37 | 4.38 | 4.14 | |
| Median | | 5.00 | 5.00 | 5.00 | 4.00 | |
| Standard deviation | | 0.76 | 0.74 | 0.78 | 1.03 | 4.33 |
| Minimum | | 1.00 | 3.00 | 1.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 148.00 | 65.00 | 73.00 | 146.00 | |
| No opinion | | 53.00 | 24.00 | 22.00 | 42.00 | |

## Overall Assessment

The programs met their stated objectives.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | | | | | | |
| Mean | 4.49 | 4.54 | 4.52 | 4.51 | 4.27 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.66 | 0.68 | 0.67 | 0.65 | 1.00 | 4.47 |
| Minimum | 2.00 | 1.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 270.00 | 188.00 | 93.00 | 74.00 | 158.00 | |
| No opinion | 17.00 | 33.00 | 12.00 | 24.00 | 35.00 | |

The program content was developmentally appropriate for the grade level.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.25 | 4.17 | 4.08 | 4.38 | 4.16 | |
| Median | 4.00 | 4.00 | 4.00 | 5.00 | 4.00 | |
| Standard deviation | 0.85 | 0.89 | 0.90 | 0.77 | 1.02 | 4.21 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 268.00 | 196.00 | 95.00 | 79.00 | 160.00 | |
| No opinion | 17.00 | 25.00 | 10.00 | 19.00 | 32.00 | |

The program content was aligned with the national mathematics, science, and technology standards.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.61 | 4.57 | 4.62 | 4.62 | 4.40 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.60 | 0.60 | 0.61 | 0.59 | 1.00 | 4.56 |
| Minimum | 3.00 | 3.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 257.00 | 192.00 | 94.00 | 77.00 | 162.00 | |
| No opinion | 30.00 | 31.00 | 11.00 | 21.00 | 33.00 | |

The program content was easily integrated into the curriculum.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.09 | 4.14 | 3.97 | 4.26 | 4.15 | |
| Median | 4.00 | 4.00 | 4.00 | 5.00 | 4.50 | |
| Standard deviation | 0.90 | 1.00 | 1.00 | 0.94 | 1.05 | 4.12 |
| Minimum | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 267.00 | 189.00 | 94.00 | 77.00 | 158.00 | |
| No opinion | 20.00 | 33.00 | 10.00 | 20.00 | 35.00 | |

The program content enhanced the teaching of mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 4.45 | 4.51 | 4.47 | 4.42 | 4.37 |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | 0.69 | 0.69 | 0.65 | 0.77 | 0.99 |
| Minimum | 2.00 | 2.00 | 3.00 | 2.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 267.00 | 193.00 | 92.00 | 77.00 | 163.00 |
| No opinion | 20.00 | 27.00 | 12.00 | 21.00 | 30.00 |

| Longitudinal mean |
|---|
| 4.44 |

The programs raised student awareness about careers that require mathematics, science, and technology.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 4.44 | 4.54 | 4.43 | 4.43 | 4.34 |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | 0.68 | 0.66 | 0.75 | 0.77 | 0.99 |
| Minimum | 2.00 | 2.00 | 1.00 | 2.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 262.00 | 190.00 | 90.00 | 77.00 | 155.00 |
| No opinion | 23.00 | 31.00 | 15.00 | 21.00 | 34.00 |

| Longitudinal mean |
|---|
| 4.44 |

The programs presented the application of mathematics, science, and technology on the job.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 4.49 | 4.55 | 4.42 | 4.51 | 4.38 |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Standard deviation | 0.67 | 0.60 | 0.72 | 0.68 | 0.98 |
| Minimum | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | 269.00 | 193.00 | 94.00 | 78.00 | 156.00 |
| No opinion | 18.00 | 26.00 | 11.00 | 20.00 | 33.00 |

| Longitudinal mean |
|---|
| 4.47 |

The programs presented workplace mathematics, science, and technology as a collaborative process.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.42 | 4.59 | 4.39 | 4.52 | 4.32 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.69 | 0.60 | 0.78 | 0.70 | 1.03 | 4.45 |
| Minimum | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 267.00 | 190.00 | 92.00 | 77.00 | 155.00 | |
| No opinion | 20.00 | 30.00 | 13.00 | 21.00 | 32.00 | |

The programs presented mathematics, science, and technology as a process requiring creativity, critical thinking, and problem-solving skills.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| Mean | 4.58 | 4.63 | 4.56 | 4.52 | 4.41 | |
| Median | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | 0.63 | 0.56 | 0.68 | 0.66 | 1.01 | 4.54 |
| Minimum | 3.00 | 2.00 | 2.00 | 3.00 | 1.00 | |
| Maximum | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | 270.00 | 193.00 | 95.00 | 77.00 | 160.00 | |
| No opinion | 17.00 | 28.00 | 10.00 | 20.00 | 31.00 | |

The programs presented women and minorities performing challenging engineering and science tasks.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 | Longitudinal mean |
|---|---|---|---|---|---|---|
| | No data | | | | | |
| Mean | | 4.55 | 4.43 | 4.53 | 4.32 | |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Standard deviation | | 0.63 | 0.69 | 0.68 | 0.98 | 4.46 |
| Minimum | | 2.00 | 3.00 | 3.00 | 1.00 | |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 | |
| Count | | 185.00 | 90.00 | 78.00 | 145.00 | |
| No opinion | | 36.00 | 15.00 | 20.00 | 43.00 | |

Have you recommended NASA CONNECT™ to a colleague?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| Yes | | | | 76.00 | 141.00 |
| No | | | | 20.00 | 37.00 |
| n = | | | | 96.00 | 178.00 |

One of the goals of NASA CONNECT™ is to educate and inform others about what NASA does. Do you think NASA CONNECT™ has been successful in this regard?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| Yes | | | | 85.00 | 180.00 |
| No | | | | 8.00 | 10.00 |
| n = | | | | 93.00 | 190.00 |

In your opinion is the information about NASA contained in NASA CONNECT™?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | No data | No data | | |
| very credible | | | | 87.00 | 174.00 |
| somewhat credible | | | | 4.00 | 5.00 |
| not credible | | | | 0.00 | 0.00 |
| I’m unable to judge | | | | 7.00 | 18.00 |

## Computers and Associated Technology

Do you have the following equipment in your (classroom, school, home)?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| Television | | | | | |
| Classroom | 236.00 | 206.00 | 97.00 | 85.00 | 171.00 |
| School | 184.00 | 167.00 | 91.00 | 75.00 | 169.00 |
| Home | 220.00 | 212.00 | 103.00 | 100.00 | 195.00 |
| | | | | | |
| VCR | | | | | |
| Classroom | 215.00 | 166.00 | 92.00 | 76.00 | 157.00 |
| School | 195.00 | 175.00 | 94.00 | 76.00 | 170.00 |
| Home | 219.00 | 199.00 | 99.00 | 100.00 | 189.00 |
| | | | | | |
| Video Camera | | | | | |
| Classroom | 40.00 | 35.00 | 26.00 | 11.00 | 50.00 |
| School | 208.00 | 172.00 | 91.00 | 56.00 | 161.00 |
| Home | 121.00 | 98.00 | 63.00 | 41.00 | 112.00 |
| | | | | | |
| Laserdisc Player | | | | | |
| Classroom | 70.00 | 47.00 | 24.00 | 21.00 | 35.00 |
| School | 138.00 | 127.00 | 64.00 | 30.00 | 97.00 |
| Home | 25.00 | 27.00 | 10.00 | 8.00 | 13.00 |
| | | | | | |
| Video Editing Equipment | | | | | |
| Classroom | 9.00 | 6.00 | 5.00 | 4.00 | No data |
| School | 74.00 | 66.00 | 32.00 | 23.00 | |
| Home | 10.00 | 13.00 | 9.00 | 11.00 | |
| | | | | | |
| Computer | | | | | |
| Classroom | 249.00 | 224.00 | 106.00 | 86.00 | 188.00 |
| School | 208.00 | 180.00 | 93.00 | 77.00 | 180.00 |
| Home | 208.00 | 203.00 | 94.00 | 98.00 | 187.00 |
| | | | | | |
| DVD | | | | | |
| Classroom | No data | 15.00 | 8.00 | 9.00 | 40.00 |
| School | | 34.00 | 17.00 | 18.00 | 87.00 |
| Home | | 58.00 | 28.00 | 53.00 | 146.00 |
| | | | | | |
| Videoconferencing | | | | | |
| Classroom | No data | No data | No data | No data | 9.00 |
| School | | | | | 56.00 |
| Home | | | | | 18.00 |

Does your computer have the following in your (classroom, school, home)?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| CD-ROM | | | | | |
| Classroom | 224.00 | 153.00 | No data | No data | No data |
| School | 193.00 | 143.00 | 107.00 | 92.00 | 199.00 |
| Home | 196.00 | 72.00 | 52.00 | 96.00 | 193.00 |
| | | | | | |
| Local Area Network | | | | | |
| Classroom | 127.00 | 129.00 | No data | No data | No data |
| School | 147.00 | 129.00 | 66.00 | No data | No data |
| Home | 57.00 | 53.00 | 22.00 | No data | No data |
| | | | | | |
| District-Wide Network | | | | | |
| Classroom | 124.00 | 189.00 | No data | No data | No data |
| School | 129.00 | 178.00 | 70.00 | No data | No data |
| Home | 29.00 | 188.00 | 1.00 | No data | No data |
| | | | | | |
| Internet Connection | | | | | |
| Classroom | 174.00 | 210.00 | No data | No data | No data |
| School | 185.00 | 171.00 | 24.00 | 93.00 | 202.00 |
| Home | 168.00 | 193.00 | 64.00 | 97.00 | 190.00 |
| | | | | | |
| DVD | | | | | |
| Classroom | No data | No data | No data | No data | No data |
| School | No data | No data | No data | 17.00 | 61.00 |
| Home | No data | No data | No data | 41.00 | 122.00 |

How many computers are in your classroom?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 2.97 | 3.12 | 2.82 | 3.81 | 4.43 |
| Median | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Standard deviation | 4.01 | 3.82 | 2.93 | 5.41 | 6.70 |
| Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum | 30.00 | 28.00 | 18.00 | 29.00 | 56.00 |
| Count | 281.00 | 249.00 | 117.00 | 103.00 | 193.00 |

| Longitudinal mean |
|---|
| 3.43 |

The operating system used on your school computers is...

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Macintosh | 100.00 | 47.00 | 29.00 | 22.00 | |
| Windows | 193.00 | 163.00 | 76.00 | 66.00 | |
| Both | No data | 29.00 | 10.00 | 11.00 | |
| Other | No data | 3.00 | No data | No data | |
| | | | | | |
| Windows XP | | | | | 32.00 |
| Windows 2000 | | | | | 39.00 |
| Windows ME | | | | | 2.00 |
| Windows 98 | | | | | 72.00 |
| Windows 95 | | | | | 21.00 |
| Windows 3.1x | | | | | 0.00 |
| Mac OS X | | | | | 5.00 |
| Mac OS 9.x | | | | | 11.00 |
| Mac OS 8.x | | | | | 4.00 |
| I don't know | | | | | 11.00 |

Have you and your students ever participated in an Electronic/Virtual field trip or videoconference?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Yes | No data | No data | No data | No data | 64.00 |
| No | | | | | 136.00 |
| n = | | | | | 200.00 |

In a given month, about how many times does a typical student use a computer in your class?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| 1-5 times | 67.00 | 83.00 | 49.00 | 40.00 | 70.00 |
| 6-10 times | 75.00 | 56.00 | 12.00 | 28.00 | 46.00 |
| 11-20 times | 62.00 | 43.00 | 27.00 | 16.00 | 40.00 |
| 21-40 times | 39.00 | 36.00 | 16.00 | 9.00 | 27.00 |
| 41+ times | 22.00 | 21.00 | 9.00 | 6.00 | 13.00 |

Generally speaking, how do the students operate the computers in your classroom?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| one student per | 142.00 | 122.00 | 47.00 | 44.00 | 56 |
| in pairs (2) | 130.00 | 98.00 | 41.00 | 22.00 | 77 |
| in groups of 3-5 | 63.00 | 43.00 | 13.00 | 11.00 | 30 |
| as a class | No data | 37.00 | 7.00 | 12.00 | 19 |
| other | No data | 15.00 | 1.00 | No data | No data |

My classroom connection to the Internet uses a _____.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| 28.8 modem | 35.00 | 14.00 | 1.00 | 10.00 | 8.00 |
| 56-K flex modem | 27.00 | 21.00 | 7.00 | 7.00 | 15.00 |
| cable modem | 35.00 | 19.00 | 18.00 | 15.00 | 24.00 |
| T-1 line | 46.00 | 87.00 | 31.00 | 23.00 | 92.00 |
| do not have one | 60.00 | 30.00 | 6.00 | 10.00 | 4.00 |
| do not know | 18.00 | 78.00 | 39.00 | 32.00 | 61.00 |

The school-based technology training provided by my school division improved my computer skills.

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 3.58 | 3.65 | 3.21 | 3.38 |
| Median | | 4.00 | 4.00 | 3.00 | 3.50 |
| Standard deviation | | 1.41 | 1.37 | 1.44 | 1.23 |
| Minimum | | 1.00 | 1.00 | 1.00 | 1.00 |
| Maximum | | 5.00 | 5.00 | 5.00 | 5.00 |
| Count | | 203.00 | 100.00 | 78.00 | 140.00 |
| No opinion | | 9.00 | 1.00 | 5.00 | 15.00 |

| Longitudinal mean |
|---|
| 3.45 |

Which of the following are among the objectives you have for student computer use?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Higher order thinking skills | No data | 198.00 | 99.00 | 72.00 | 182.00 |
| Mastering skills just taught | 180.00 | 139.00 | 64.00 | 51.00 | 140.00 |
| Remediation of skills not learned well | 180.00 | 142.00 | 65.00 | 53.00 | 113.00 |
| Expressing ideas in writing | 191.00 | 139.00 | 69.00 | 66.00 | 141.00 |
| Communicating electronically with others | 121.00 | 101.00 | 43.00 | 41.00 | 77.00 |
| Finding out about ideas and information | 227.00 | 202.00 | 97.00 | 91.00 | 177.00 |
| Analyzing information | 136.00 | 166.00 | 68.00 | 57.00 | 157.00 |
| Presenting information to an audience | 114.00 | 136.00 | 54.00 | 54.00 | 135.00 |
| Improving computer skills | 189.00 | 179.00 | 83.00 | 72.00 | 135.00 |
| Learning to work collaboratively | 168.00 | 159.00 | 77.00 | 63.00 | 143.00 |
| Learning to work independently | 187.00 | 169.00 | 84.00 | 68.00 | 134.00 |

In which of these ways do you use computers to prepare lessons or in other professional activities?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| a. to record or calculate student grades | | | | | |
| do not use | 88.00 | 51.00 | 27.00 | 28.00 | 34.00 |
| occasionally | 50.00 | 22.00 | 29.00 | 12.00 | 14.00 |
| weekly | 71.00 | 52.00 | 29.00 | 20.00 | 44.00 |
| more often | 76.00 | 129.00 | 34.00 | 47.00 | 116.00 |
| b. to make handouts for students | | | | | |
| do not use | 88.00 | 5.00 | 4.00 | 4.00 | 2.00 |
| occasionally | 50.00 | 50.00 | 30.00 | 26.00 | 31.00 |
| weekly | 71.00 | 73.00 | 31.00 | 28.00 | 66.00 |
| more often | 76.00 | 128.00 | 53.00 | 49.00 | 108.00 |
| c. to correspond with parents | | | | | |
| do not use | 64.00 | 63.00 | 35.00 | 32.00 | 38.00 |
| occasionally | 121.00 | 106.00 | 51.00 | 48.00 | 76.00 |
| weekly | 67.00 | 40.00 | 21.00 | 13.00 | 50.00 |
| more often | 35.00 | 43.00 | 12.00 | 14.00 | 41.00 |
| d. to write lesson plans or related notes | | | | | |
| do not use | 55.00 | 36.00 | 17.00 | 14.00 | 10.00 |
| occasionally | 89.00 | 60.00 | 35.00 | 30.00 | 36.00 |
| weekly | 77.00 | 71.00 | 39.00 | 31.00 | 64.00 |
| more often | 64.00 | 90.00 | 28.00 | 33.00 | 95.00 |
| e. to get information or pictures from the Internet for use in lessons | | | | | |
| do not use | 38.00 | 21.00 | 8.00 | 2.00 | 3.00 |
| occasionally | 128.00 | 88.00 | 49.00 | 48.00 | 62.00 |
| weekly | 61.00 | 58.00 | 27.00 | 21.00 | 49.00 |
| more often | 59.00 | 90.00 | 34.00 | 37.00 | 90.00 |
| f. to use camcorders, digital cameras, or scanners to prepare for class | | | | | |
| do not use | 134.00 | 117.00 | 54.00 | 51.00 | 57.00 |
| occasionally | 118.00 | 92.00 | 47.00 | 46.00 | 99.00 |
| weekly | 24.00 | 30.00 | 11.00 | 4.00 | 26.00 |
| more often | 10.00 | 17.00 | 6.00 | 7.00 | 24.00 |
| g. to exchange computer files with other teachers | | | | | |
| do not use | 149.00 | 109.00 | 58.00 | 55.00 | 31.00 |
| occasionally | 107.00 | 99.00 | 51.00 | 39.00 | 72.00 |
| weekly | 13.00 | 26.00 | 8.00 | 8.00 | 33.00 |
| more often | 16.00 | 21.00 | 2.00 | 6.00 | 72.00 |
| h. to post student work, suggestions for resources, or ideas/opinions on the web | | | | | |
| do not use | 201.00 | 167.00 | 72.00 | 78.00 | 99.00 |
| occasionally | 61.00 | 60.00 | 37.00 | 20.00 | 67.00 |
| weekly | 16.00 | 14.00 | 8.00 | 7.00 | 19.00 |
| more often | 8.00 | 13.00 | 2.00 | 3.00 | 22.00 |

## Demographics

Gender

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Male | 68.00 | 71.00 | 30.00 | 34.00 | 62.00 |
| Female | 227.00 | 188.00 | 89.00 | 75.00 | 147.00 |
| n = | 295.00 | 259.00 | 119.00 | 109.00 | 209.00 |

Present professional duties?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Teacher | 232.00 | 238.00 | 110.00 | 90.00 | 176.00 |
| Home Schooler | 7.00 | 5.00 | 1.00 | 12.00 | 13.00 |
| Technology Program Coordinator | 2.00 | 19.00 | 9.00 | 7.00 | 16.00 |
| Principal | 14.00 | 0.00 | 2.00 | 1.00 | 5.00 |
| Math Coordinator | 1.00 | 13.00 | 4.00 | 13.00 | 18.00 |
| Science Coordinator | 7.00 | 33.00 | 23.00 | 23.00 | 36.00 |
| Librarian/Media Specialist | 21.00 | 7.00 | 7.00 | 5.00 | 9.00 |
| Community College Instructor | 0.00 | 1.00 | 3.00 | 0.00 | 2.00 |
| College/University Instructor | 3.00 | 8.00 | 4.00 | 2.00 | 10.00 |
| Distance Learning Coordinator | No data | 3.00 | 1.00 | 1.00 | 5.00 |
| Curriculum Coordinator | No data | 10.00 | 2.00 | 5.00 | 12.00 |
| Other | 1.00 | 29.00 | 8.00 | 13.00 | No data |

School Type

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| College/University | 2.00 | 7.00 | 1.00 | 1.00 | 7.00 |
| Community College | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Home School | 6.00 | 7.00 | 1.00 | 12.00 | 10.00 |
| Native American | No data | 3.00 | 0.00 | 0.00 | 0.00 |
| Private/Parochial | 21.00 | 7.00 | 6.00 | 18.00 | 17.00 |
| Public | 266.00 | 232.00 | 111.00 | 78.00 | 179.00 |
| n = | 296.00 | 257.00 | 120.00 | 109.00 | 213.00 |

School Location

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Rural | 102.00 | 89.00 | 38.00 | 39.00 | 63.00 |
| Suburban | 108.00 | 87.00 | 43.00 | 41.00 | 85.00 |
| Urban | 83.00 | 83.00 | 37.00 | 28.00 | 64.00 |
| n = | 293.00 | 259.00 | 118.00 | 108.00 | 215.00 |

Highest Degree

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| High School Diploma | 2.00 | 1.00 | 0.00 | 0.00 | 5.00 |
| Associates (2 year) | 2.00 | 3.00 | 0.00 | 5.00 | 6.00 |
| Baccalaureate | 85.00 | 77.00 | 30.00 | 47.00 | 58.00 |
| Masters/Equivalent | 200.00 | 160.00 | 70.00 | 52.00 | 120.00 |
| Doctorate | 8.00 | 6.00 | 3.00 | 1.00 | 17.00 |
| Educational Specialist | No data | 12.00 | 13.00 | 6.00 | 6.00 |
| n = | 297.00 | 259.00 | 116.00 | 111.00 | 212.00 |

Ethnicity

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| African American | 22.00 | 16.00 | 14.00 | 7.00 | 7.00 |
| Asian | 1.00 | 3.00 | 0.00 | 1.00 | 4.00 |
| Caucasian | 258.00 | 223.00 | 101.00 | 90.00 | 185.00 |
| Hispanic | 8.00 | 5.00 | 3.00 | 3.00 | 10.00 |
| Native American | 2.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| Pacific Islander | 0.00 | 1.00 | 0.00 | 2.00 | 0.00 |
| Other | 1.00 | 6.00 | 1.00 | 3.00 | 0.00 |
| n = | 292.00 | 256.00 | 119.00 | 108.00 | 208.00 |

Years as Educator

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 16.30 | 14.95 | 17.78 | 13.29 | 17.10 |
| Median | 15.00 | 13.00 | 17.00 | 11.00 | 16.00 |
| Standard deviation | 9.19 | 10.26 | 8.81 | 9.90 | 9.89 |
| Minimum | 1.00 | 0.00 | 3.00 | 1.00 | 1.00 |
| Maximum | 49.00 | 55.00 | 34.00 | 35.00 | 43.00 |
| Count | 292.00 | 256.00 | 120.00 | 110.00 | 208.00 |

| Longitudinal mean |
|---|
| 15.88 |

Age

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Mean | 44.94 | 43.90 | 45.85 | 45.82 | 46.82 |
| Median | 46.00 | 45.00 | 47.00 | 47.00 | 47.00 |
| Standard deviation | 8.70 | 9.10 | 7.96 | 7.99 | 9.79 |
| Minimum | 23.00 | 22.00 | 25.00 | 25.00 | 21.00 |
| Maximum | 75.00 | 62.00 | 60.00 | 60.00 | 81.00 |
| Count | 282.00 | 250.00 | 110.00 | 109.00 | 205.00 |

| Longitudinal mean |
|---|
| 45.35 |

Do you own a personal computer?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Yes | 270.00 | 241.00 | 113.00 | 108.00 | 119 |
| No | 26.00 | 15.00 | 7.00 | 1.00 | 8 |
| n = | 296.00 | 256.00 | 120.00 | 109.00 | 127 |

Member of a professional organization?

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | | | | | |
| Yes | 159.00 | 192.00 | 87.00 | 68.00 | 148.00 |
| No | 138.00 | 63.00 | 30.00 | 41.00 | 64.00 |
| n = | 297.00 | 255.00 | 117.00 | 109.00 | 212.00 |

Years with NASA CONNECT™

| | 98-99 | 99-00 | 00-01 | 01-02 | 02-03 |
|---|---|---|---|---|---|
| | No data | | | | |
| Mean | | 1.10 | 2.44 | 1.15 | 2.27 |
| Median | | 1.00 | 2.00 | 1.00 | 2.00 |
| Standard deviation | | 0.55 | 1.28 | 0.67 | 1.19 |
| Minimum | | 0.00 | 0.00 | 0.00 | 0.00 |
| Maximum | | 4.00 | 8.00 | 4.00 | 8.00 |
| Count | | 253.00 | 114.00 | 101.00 | 204.00 |

| Longitudinal mean |
|---|
| 1.74 |

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*Featuring Five Years of Longitudinal Trend Data*

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**14. ABSTRACT**

NASA CONNECT™ is a research-, inquiry-, and standards-based, integrated mathematics, science, and technology series of 30-minute instructional distance learning (television and web-based) programs for students in grades 6–8. Respondents who evaluated the programs in the 2002–2003 NASA CONNECT™ series reported that (1) they used the programs in the series; (2) the goals and objectives for the series were met; (3) the programs were aligned with the national mathematics, science, and technology standards; (4) the program content was developmentally appropriate for grade level; and (5) the programs in the series enhanced and enriched the teaching of mathematics, science, and technology.

**15. SUBJECT TERMS**

NASA CONNECT™; Program assessment; Survey research

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